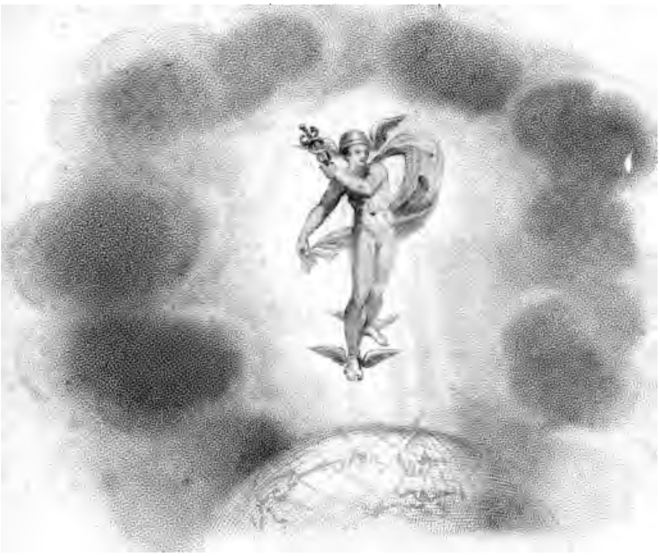

THE LONDON Journal of Arts and Sciences,

FOR THE YEAR 1826.

An Original Work

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VOL. XII.

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THE

LONDON JOURNAL

OF

Arts and Sciences;

CONTAINING

REPORTS OF ALL NEW PATENTS,

WITH

DESCRIPTIONS OF THEIR RESPECTIVE PRINCIPLES AND PROPERTIES;

ALSO

Original Communications

ON OBJECTS CONNECTED WITH

SCIENCE AND PHILOSOPHY;

PARTICULARLY SUCH AS EMBRACE THE MOST RECENT

INVENTIONS AND DISCOVERIES

IN

PRACTICAL MECHANICS.

BY W. NEWTON.

VOL. XII.

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PREFACE.

In closing the Twelfth Volume of the London Journal of Arts and Sciences, the Editor begs to express his acknowledgments to his numerous Subscribers, for the flattering patronage which this work still continues to receive.

While he feels confidence in declaring that no exertion has been wanting on his part to render the work what it professes to be, a complete repository of every New Patent Invention, he still regrets that he has found it impossible in the present volume (notwithstanding the great number of Patents inserted) to bring up the reports of all the specifications inrolled during the year 1825. In consequence of the unprecedented number of Patents granted in that year, there

still remains a few to be noticed, which will be given early in the succeeding volume.

He has, however, the satisfaction of saying, that the most effectual means of meeting a recurrence of the like pressure has been provided, and which he trusts, will give increased satisfaction to his readers, viz. an extension of the limits heretofore prescribed to the work, by the addition of an extra half sheet in every number: this will also afford room for a more enlarged range of POLYTECHNIC INFORMATION, and which he trusts will be found an acquisition to the JOURNAL, and a considerable improvement to its present usefulness.

London, January 1827.

Shalder's Apparatus for raising water.

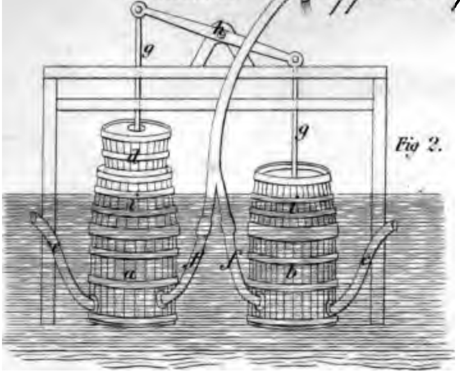
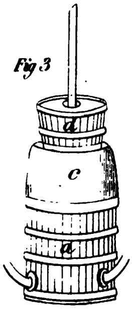


Fig 2.

Fig 3



Ayton's Bolting Machine.

Fig 5.

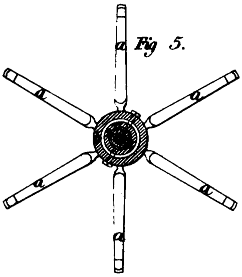


Fig 4.

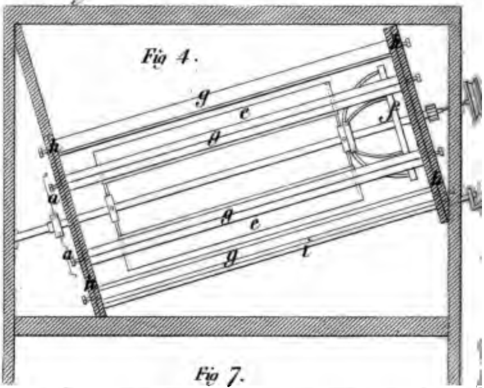
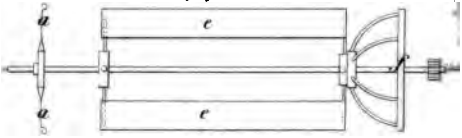


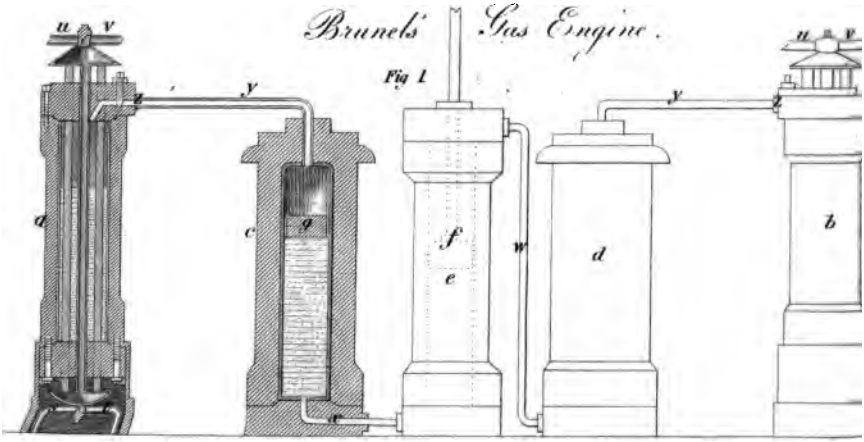
Fig 6

Fig 7.



Brunel's Gas Engine.

Fig 1.



THE

London

JOURNAL OF ARTS AND SCIENCES.

No. LXX.

Recent Patents.

To Marc Isambard Brunel, *of Bridge Street, Blackfriars, in the City of London, Engineer, for his Invention of certain Mechanical arrangements for obtaining Powers from certain Fluids, and for applying the same to various useful purposes.*

[Sealed 16th July, 1825.]

The object of the patentee is to employ the expansive force of gas as a mechanical power, and availing himself of its varying elasticity, under different temperatures, he proposes by suddenly heating and cooling two volumes of gas alternately, the forces of which are opposed to each other, to produce a reciprocating action on a piston or other moveable piece of machinery interposed as a resisting medium between the dissimilar elastic forces: the sum of the maximum force above the

minimum being the power to be employed as the first mover for actuating machinery attached to the piston rod.

In order to bring these principles into effective operation certain vessels are to be arranged, with tubes communicating from one to the other, but the plan set out in the specification appears to be merely a crude project for combining the necessary parts of such an apparatus, and not the details of a compact and perfect engine.

The patentee states, " The fluids or liquids from which the powers in question are to be obtained, are those that result from the condensation of certain gases, which at the ordinary pressure and temperature of the atmosphere, always remains in a gaseous or æriform state. There are several gases which come under this description some of which, are treated upon by Mr. Faraday in the papers read before the Royal Society of London in 1823. I give the preference to carbonic acid gas.

" This gas at the temperature of freezing water, requires a pressure of about thirty atmospheres, to condense and retain it in a liquid state. It may be obtained by decomposing any carbonate, by the action of any of the common acids. The mode of obtaining the liquid from the gas, is by forming the gas under a gasometer, and condensing it afterwards by means of a condensing pump, into a vessel, and continuing the operation until it passes to the liquid state."

The apparatus adapted for affecting the motive force, that is for working the piston, is shewn in Plate I. fig. 1; *a*, and *b*, are the two cylindrical vessels made particularly strong, in which the gas is to be placed, or we rather suppose the liquor resulting from a condensation of the gas, as that appears to be implied by the specification, though not expressed. The vessel *a*, is shown in section, in order to exhibit the tubes and passages in the interior;

the vessel *b*, is similarly constructed within, but exhibits only its external appearance.

When the vessels *a*, and *b*, have been charged with the conducted gas through the orifice *z*, by means of a force pump, a stop cock is screwed down for the purpose of confining it: and the pipes or tube *y*, are then affixed to the orifices, and to the tops of the vessels, *c*, and *d*, called the expansion vessels. The vessel *c*, is shewn in section: the interior of *d*, is similarly formed. The vessel *e*, is a plain hollow cylinder with caps, having a piston *f*, shewn by dots working up and down within it. From the lower part of the expansion vessel *c*, a pipe *x*, leads to the interior of the cylinder *e*, below the piston, and from the lower part of the expansion vessel *d*, a similar pipe *w*, leads to the interior of the cylinder *e*, above the piston.

The vessels *a*, *b*, *c*, and *d*, are to be lined with wood or some other imperfect conductor of heat, in order to prevent the temperature of the metal of which the vessels are constructed affecting the temperature of the gas. There are passed through the vessels *a*, and *b*, in perpendicular directions, several tubes made of thin metal, and well packed at the joints, which tubes are connected to the pipes *u*, and *v*, by a cock at top, and are also in a similar way connected to the discharge pipes *s*, and *t*, at bottom. The expansion vessels *c*, and *d*, are intended to contain a quantity of oil or other suitable fluid upon the surface of which a float *g*, swims.

The apparatus being thus arranged, the stop cocks at *z*, *z*, are to be opened so as to allow free communication between the vessels *a*, *c*, and *b*, *d*, through the pipes *y*. A quantity of hot water or steam is then to be admitted into the tubes within the vessel *a*, from the pipe *u*, by

which the temperature of the condensed gas in that vessel will be considerably raised, and its elastic force of consequence greatly increased: by which means the gas will be driven through the pipe *y*, to the upper part of the vessel *c*, and then exerting its expansive power against the surface of the float *g*, that float will be forced down, driving the oil which occupied the lower part of the vessel through the pipe *x*, into the cylinder *e*, and there acting against the under side of the piston *f*, will cause it to rise with considerable power.

At the same time that this expansion is going on in the vessels, *a*, *c*, a contrary effect is produced in the vessels *b*, *d*, for in a similar way a quantity of cold water is introduced into the tubes within the vessel *b*, which by cooling, and consequently condensing the gas in that vessel, allows the float to rise in the vessel *d*, the oil passing from the upper part of the cylinder *e*, through the pipe *w*, into the vessel *d*, and thus giving way to the rising piston *f*.

Reversing these operations will produce the returning stroke of the piston: that is, after having discharged both the hot and cold waters from the vessels *a*, and *b*, through the pipes at bottom, the gas in the vessel *a*, is to be cooled down so as to condense it, by a quantity of cold water introduced from the pipe *v*, and the temperature of the gas in the vessel *b*, to be raised, by a quantity of hot water or steam from the pipe *u*, which will cause the float to descend in the vessel *a*, and the oil to be driven into the cylinder *e*, above the piston, thereby depressing the piston, and driving the oil on the under side back into the vessel *c*. These operations are produced by merely opening and closing the cocks at suitable intervals, and this is proposed to be done by some such contrivance as those usually adapted to work the valves of a steam engine.

In further illustration of the principal upon which this apparatus is intended to act, the patentee adds: "Now if the hot water say at 120°. is let in through the tubes of the receiver *a*, and cold water at the same time through the receiver *b*, the liquid in the first receiver will operate with a force of about ninety atmospheres, while the liquid in the receiver *b*, will only exert a force of forty or fifty atmospheres. The difference between these two pressures will therefore be the acting power, which through the medium of the oil, will operate upon the piston in the cylinder. It is easy to comprehend that by letting hot water through the receiver *b*, and cold water at the same time through the opposite one *a*, a re-action will take place, which will produce in the working cylinder an alternating movement of the piston, applicable by the rod to various mechanical purposes as required."

In conclusion the patentee states "I claim as my invention, the application of the receiver as it is before described; the essential part of which, is the internal application of the vessels or tubes destined to convey the hot and cold. Their form, and the manner they are applied render them capable of resisting the intense external pressure of the liquid, and yet admit of their being made so thin as to allow of the rapid and complete transmission of heat, and cold, through them, to and from the liquid. I further claim the arrangements by which the receivers acting in opposition to each other, produce without any aid of intermediate valves, an alternating action which may be applied to various mechanical purposes."

[*Inrolled, January,* 1826.]

To William Busk, *of Broad Street, in the City of London, Esq. for his Invention of certain Improvements in propelling Ships, Boats, Vessels, or other floating bodies.*

[Sealed 4th November, 1824.]

This invention consists in the adaptation of elastic plates to the sides, or the stern of a vessel, which are intended to be agitated in the water in a similar way to the motions of a fishes tail, and fins, in the act of swimming, and by these means are to propel the vessel forward. The several plans proposed are shewn in Plate II.

Fig. 1, is a horizontal view of part of a vessel; *a*, is a thin plate of metal seen edgewise, affixed by means of bracers at its back part, to an upright shaft, *b*, which turns upon pivots, as at fig. 2. To this shaft an arm or lever *c*, is attached, for the purpose of working the plate *a*, too, and fro, so as to give it a latteral pressure against the water.

The curves which the elastic plate make in passing through the water are shewn by dots in the diagram fig. 3. The plates *d*, *d*, placed on the sides of the vessel are similarly constructed to the plate *a*, and their shafts turning upon pivots are worked too and fro, so as to give action to the plates in latteral directions, by means of their arms, *e*, *e*. The arms and the lever *c*, may be attached to a reciprocating part of a steam engine, or other first mover, or they may be actuated by manual labour.

Fig. 4, shews another method of adapting an elastic plate, as a propeller. In this contrivance *a*, the plate, is placed horizontally, and is affixed to a vertical shaft, which slides up and down in a frame *b*, and being attached by a

joint to the crank *c*, is, as the crank revolves, made to ascend and descend in the water: where by bending in the manner above described a resistance is produced against the water, which is intended to impel the vessel forward.

Another contrivance is exhibited at fig. 5, where two elastic plates *a, a*, are affixed to an arm *b*, and made to revolve upon a central axle *c*, by means of a band from the rotatory parts of a steam engine passing round the pully or rigger, *d*. The inclined surfaces of the bending plates pressing against the water, as they revolve, are intended to produce the same propelling effect as that before described. Similar rotatory plates may also be adapted to the sides of the vessel, and actuated in the same way.

Fig. 6, represents the side of a flat bottomed boat suited for a canal, to which lee boards are proposed to be adapted upon a new plan; *a*, is the lee board, formed by an elastic plate of metal and attached by stiff braces at its hinder part to a vertical box, *b*. This box has a rack, into which a toothed wheel *c*, takes, and by turning this wheel the plate *a*, is raised out of the water, or depressed into the water: the wheel being held fast by a pall when the box is intended to be stationery. It is considered by the patentee that as the boat passes along a canal, the elastic plate will bend, and bearing against the water latterally, will assist in propelling the vessel; but in what way this last effect is to be produced, does not appear at all obvious.

[*Inrolled, May*, 1825.]

To THOMAS COOK, *of Upper Sussex Place, Kent Road, in the County of Surrey, Lieutenant in the Royal Navy, for his Invention of Improvements in the Construction of Carriages, and Harness to be used therewith, whereby greater safety to the persons riding in such Carriages, and other advantages will be obtained.*

[Sealed 16th July, 1825.]

THIS invention is a contrivance by which the horse, or horses that draw a carriage are prevented from running away. It consists in passing a cord from the bearing rein, or from the bit, or other part of the horses head, to a cylindrical box on the axletree of the running wheels: and in adapting a lever that may be acted upon by the foot of the driver, or any other person riding in the carriage, which lever when pressed sideways, causes the cylindrical box to lock to the nave of one of the running wheels, and as the wheel revolves by the forward progress of the carriage, the cord is wound round an axle within the cylindrical box, which progressively draws up the horse, until he is compelled to stop.

The invention appears to be simply that of drawing up the horse by means of a cord coiling round a rotatory axle, which axle is to be actuated by the running wheel when the apparatus is locked to the nave of that wheel; but the mechanical contrivance for effecting this object, as set out in the specification, has so much complexity about it, that the inventor has very judiciously disclaimed the precise mechanism herein proposed, and rests his invention and patent right upon drawing up the horse by means of the cord progressively coiled upon an axle, by whatever mechanism that object can be effected.

In the apparatus proposed, a cylindrical box is made to slide a short distance along the axletree, near the inner side of the nave of the wheel, which box, is moved by the lever, before mentioned, exactly in the same way as a coupling box of a lathe, so as to put the box in and out of geer with the rotatory wheel at pleasure. Upon the inner part of the nave of the wheel there is a toothed rim, and a corresponding toothed pinion attached to the box, is intended to take into this toothed rim, when the box and the wheel are locked together.

The rotation of the running wheel is thus made to turn the toothed pinion when in geer, and the toothed pinion actuating a beveled wheel, and this a ratchet, causes the coiling axle to be turned a short distance at every revolution of the running wheel, and thus to coil up the rope slowly: which rope, passing through a staple behind the horses neck, gradually draws him in, and ultimately stops his progress.

The patentee says :—" I do not mean to limit myself to the employment of those methods only, or to the method of fixing them shewn, but on the contrary, to avail myself of any and every other mode by which my said invention or improvement of causing the horse, or horses in carriages of every description to exert their strength in contributing to control rein in, or stop themselves, upon any emergency at the will of the driver.

[*Inrolled January,* 1826.]

To William Shalders, *of the City of Norwich, Leather Cutter, for his new Invented gravitating expressing Fountain, for Raising and Conveying Water or any other Fluid for any purpose.*

[Sealed 12th April, 1825.]

The invention cloaked under this peculiar title, is

merely a double force pump, but constructed in a very uncouth manner as the figures in Plate I. will show.

The patentee proposes to place two vats or tubs, *a*, and *b*, fig. 2, at the bottom of a well or other reservoir from which the water is to be raised; to the upper edge of each of these vats the rim of a leathern tube is to be attached, and rendered water tight at the joint, this leather tube is shewn at *c*, in the detached fig. 3, representing one of the vats and its appendages; *d*, is a plunger consisting of a box made slightly, tapering toward the bottom, and to the middle part of this box the upper edge of the leather tube *c*, is to be secured by a hoop so as to form a water tight joint, and connect the vat and the plunger together. The water is intended to pass by gravitation down the pipes *e*, *e*, into the vats *a*, and *b*. There is a valve which opens inwardly at the bottom of each of these pipes, and there are also pipes *f*, *f*, for the discharge of the water furnished with valves, opening outwardly. The two plungers *d*, are affixed to rods, *g*, *g*, and connected to a vibrating beam, *h*, which may be actuated by a steam engine, or other suitable alternating power. There are rims or hoops *i*, *i*, placed upon the vats *a*, and *b*, for the purpose of inclosing the leather tubes *c*, and preventing them from bursting when extended, this rim or hoop is removed in fig. 3, in order to shew the mode of connecting the tube.

The apparatus being placed in a well, or reservoir, as before said, and as exhibited in fig. 2, the reciprocating beam *h*, is put in motion when the descent of the plunger *d*, with its flexible leather tubes displaces (or as the patentee says) expresses the water from the vat *a*, and which having no other mode of escape passes up the pipe, *f*. On the plunger rising again the water is prevented from returning from the pipe *f*, by a foot valve, and a fresh supply of water from the well passing through the pipe *e*, fills

the vat, *a*. The descent of the plunger in the vat *b*, forces or expresses another quantity of water up the pipe *f*, and thus, by the reciprocating action of the plungers, the water is driven up the pipe, and discharged at an upper level.

[*Inrolled, June,* 1825.]

To JAMES AYTON, *of Trowse, in the County of Norfolk, Miller, for his Invention of an Improvement or Spring to be applied to Bolting Mills, for the purpose of facilitating and Improving the Dressing of Flour and other substances.*

[Sealed 19th February, 1825.]

The patentee considers that the advantages of his invention will be rendered more immediately evident by first describing the construction of the ordinary apparatus employed for bolting flour. He therefore commences his specification with the description of such an apparatus, as follows :—

"The bolting mill is that part of the machinery of a flour mill to which the bolting cloth is fixed or applied for dressing flour and other substances. It is generally composed, in the way hitherto used, of six bars of wood, united by arms passing through an axle, forming, when so combined, a circle whose diameter is generally twenty-two and half inches at the upper end or head, and tapered to twenty and a half inches at the tail or lower end; but in some instances they are twenty-two and a half inches throughout, in which case they are called equal reels, to distinguish them from the taper ones.

"The bolting cloth is a cylindrical sieve, and considerably larger in diameter than the reel upon which it is fixed. At each end of the bolting cloth a strip or band of leather is fastened to it, by being neatly sewed. This serves to strengthen the cloth; and the leather fixed to the head or upper end of the cloth has a drawing string inserted in it, for the purpose of confining or fixing it over the rim at the head of the reel. At the bottom of the bolting cloth six loops are attached to the tail leather; each of these loops is brought to the end of each bar, drops into a notch made to receive it, and so fixes the cloth at the tail of the reel.

"The reel is placed in an inclined position, (see Plate I, fig. 4,) and is made to revolve rapidly within six bars of wood, called beaters, fixed to the box or case which contains and incloses the reel. These beaters are placed parallel to the bars of the reel, at equal distances around it (but in some cases the upper bar is left out), and about half an inch distance from each bar of the reel when they are placed opposite each other.

"The reel, when set to work, is turned with great velocity, and the centrifugal force would throw out, to its utmost extent, the bolting cloths, were it not intercepted by the beaters. Whilst a constant stream of meal is entering the bolting cloth at the upper end, the continual and repeating blows of the cloth against the beaters forces the flour through the mashes of the cloth, which, without the action of the beaters, would soon be clogged or choked up; and the offal, consisting of bran, pollard, and sharps, are, by the inclination of the reel, delivered at the tail end of the bolting cloth.

"The complete success of the operation depends very much upon two particulars: first, the rapid and powerful vibration of the bolting cloth; secondly, the equable

manner of its action upon the beaters. Both of these requisites, according to the present mode of fastening the loops to the bars of the reel, are very imperfect, the only vibration (and which is very trifling) being obtained from the elasticity of the cloth: while, from the stretching of the leathers at the head and tail, and also the loops, with various other causes, the cloth frequently takes an eccentric position upon the reel, performs its work but slowly and imperfectly, and when going at a great rate, or not regularly supplied with meal, is sure to be partially injured, or torn to pieces."

In order to obviate these inconveniences, the present invention is proposed, which consists principally in the employment of a series of elastic arms, to which the tail leather of the bolting cloth is to be attached. In Plate I, fig. 5, is a front view of this apparatus, and fig. 6, is a section of the same; *a*, *a*, *a*, are the elastic steel arms fixed into a ring *b*, which is attached to another inner ring *c*, by means of two pins, and this ring *c*, is also attached to the central socket *d*, by similar pins at right angles to the former, making the rings, and their pins, to form a universal joint. The steel arms *a*, are made extremely thin, and hooked toward their extremities to receive loops, affixed to the tail leather of the bolting cloth. The socket *d*, is to be fixed on the axle of the bolting reel, as at fig. 7.

In explanation of the effect of this apparatus when in action, the patentee says:—"When this instrument or spring is fixed upon the proper part of the axle of a bolting reel, and the loops at the tail leather of the bolting cloth are placed in the hooks, at the extremities of the spring arms, instead of the bolting cloth being drawn into the notches, at the ends of the bars of the reel, a very constant and uniform tension will be maintained, so that when set to work, each part of it will strike the beaters

with equal force, and it will preserve a proper degree of vibration: thereby causing it to perform its work in a safe, speedy, and highly beneficial manner."

But in order to use this apparatus in the most advantageous manner, certain improvements are proposed to be adapted to the ordinary bolting machine; these however, are not claimed, but are exhibited in fig. 4, where the side of the box or frame is removed to shew the interior. The bolting reel, above-mentioned, is here seen, and upon it are the fans *e*, made of strips of stout cloth, or duck, which when put in rapid motion produce a wind like a winnow. The bolting cloth is drawn over the circular frame *f*, and is confined at that end by a running string; at the other end, its tail leather is hooked to the spring arms, when if the beaters *g*, *g*, *g*, are adjusted to their proper distances from the cloth, the operation will go on well.

As circumstances do sometimes occur to render it necessary that these beaters should be adjusted, a contrivance is proposed by which this may be done with fecility. At each end of the beaters there are pins, extending through the plates *h*, *h*, for the purpose of fixing them. These end plates are double, and have each slots formed in them, for the pins to pass through. In one plate the slots are radiating from the centre, in the other, curved nearly in the direction of tangents; hence it is only necessary when the distances of the beaters from the centre require to be increased, or diminished, that one of these plates at each end should be slidden a little way round, which may be done by two pinions upon an axle *i*, (to be turned by a winch) taking into some teeth, cut in the edges of the plates, and the effect of this will be that the pins slide a little distance in their slots, and shift the positions of the beaters further from, or nearer towards the flyers.

By this simple contrivance the distance of the beaters

may be adjusted in an instant; and by the use of a winnow, instead of the common reel, as herein described, the injurious effects of the reel bars upon the cloth will be avoided most completely. As the outer extreme edges of the four pieces of duck pass within about three quarters of an inch of the beaters, there is always an open space of eight or ten inches in the centre, round the axle, from the inner extreme edges of the winnow; and as this part of the machinery of a bolting mill revolves with great rapidity, the pieces of duck set the air in a very brisk motion, and this circumstance tends very powerfully to force the flour through the meshes or interstices of the bolting cloth, while the instrument or spring keeps the cloth in a constant state of tension, and tremulous vibration, thereby preventing any tendency that the flour may have to clog, and fill up the interstices, or meshes of the bolting cloth.

The specification concludes by saying:—"In order to indentify and distinguish my invention more particularly, I, the said James Ayton, do hereby declare that my invention consists entirely in the application of an instrument or spring, as described and set forth. And although I prefer the method of constructing the universal joint, and of making and combining the springs or elastic arms, as therein described, yet, the same beneficial effect may be produced by using spiral springs, attached to the non-elastic arms, fixed to a universal joint, to which the loops of the bolting cloth may be applied; or in many other simple ways known to workmen, without departing from the principle herein contained, namely, that of applying a spring to give tension to the bolting cloth, by the application of which the dressing of flour, meal, and other substances, will be greatly facilitated and improved."

[*Inrolled, August,* 1825.]

To Molyneaux Shuldham, *of Brampton Hall, Wrangford, in the County of Suffolk, Lieutenant in the Royal Navy, for his Invention of certain Improvements for the purpose of Setting, Working, Reefing, and Furling, the Sails of Boats, Ships, and other vessels.*

[Sealed 8th July, 1825.]

The patentee states, that the chief objects of these improvements, are the reduction of manual labour, and of the wear and tear, of the rigging on shipboard, which he proposes to effect by " causing the sails, connected with the masts, to turn altogether upon necks and pivots, made at the lower ends of the masts, as centres; and which said necks, move in collars affixed and secured to the beams of the boat, ship, or other vessel, while the pivots turn in steps or pivot holes, secured to their keelsons." The turning round of the masts may be effected either by the action of the wind upon the sails, or by manual labour, or by both conjointly, and the quantity of their motion may be regulated or limited, by employing tackel properly fitted for the purpose.

In Plate II. fig. 7, *a*, represents a mast turning in a collar, *b*, its lower end or pivot, bearing in a step or hole *c*, in the keelson. For the sake of strength, the lower part of the mast and its bearings may be of iron. The boom *d*, is made to turn upon a pin, passed through the mast, and is secured by a screw and nut, or by other means. By this contrivance, the boom can be turned up on the pin, and brought parallel with the mast, which is desirable for the convenience of stowing it in the least compass; *e*, is the yard, either hoisted by a halyard passed through a shieve hole in the mast head, or by a block;

f, is the sail, laced both to the yard and boom. When the mast is unstepped the boom may be turned up and the sail furled round it.

This is the simplest construction of the proposed revolving mast, and is here shewn adapted to a boat, but when the same improvement is to be applied to larger vessels, the patentee proposes to form his masts by means of four poles raised upon a cross piece at bottom, and united at top to a cap or mast head: the poles so united, forming an open pyramidical mast. Vessels rigged in this manner, are shewn in the figures, 8, 9, 10, and 11.

The specification contains, an elaborate description of the details connected with the rigging of ships of different kinds, and the modes of working them; but, as this consists of nautical terms for the most part unintelligible to the general reader, we shall simply mention those particular features, which the patentee points out, as advantageous, when employed in connection with his revolving masts.

Fig. 8, exhibits an open quadrangular mast, suited to a *latteen* sail, the poles being inclined forward, to balance the yard and boom, which are united at their fore ends, by a pin or bolt. In adopting the invention of the revolving sail to cutters, schooners, sloops, and other fore and aft rigged vessels, it is proposed, to erect only three poles; so as to produce an open triangular pyramidical mast, which is to be morticed into the cross piece at bottom, and secured by braces on the sides. This contrivance affords the means of opening either side of the double jib, for the purpose of laying to, or paying the vessels head off. By the complete revolution of the mast and sails, the square-sail commonly used in cutters, when going before the wind, may be dispensed with. Fig. 9, is an elevation of a schooner, shewing the manner of applying the open

triangular pyramidical masts, to that species of vessel. These masts and sails may be worked either by tackles fixed occasionally to the arms of the crosses, or to the booms, or by endless ropes passing round wheels.

In case of applying these improvements to vessels of greater burden, it would be necessary to employ means to afford greater support to the masts and sails, than those heretofore described. This may be done, by combining iron and wood together in the construction of the masts, and their supports; and instead of making them revolve merely upon a pivot and step, as first described, causing them to turn round with antifriction rollers running upon a circular plate. As the sails act of themselves, or by the power of the wind in the manner of a windvane, the necessity of working the yard by braces, and the courses by tacks and sheets, is avoided, except in the case of hauling up, or setting the courses.

Fig. 10, represents a brig fitted up with courses, top-sails, top-gallant-sails, and royals, set upon a wind. As the necessity of backing the sails around, at right angles to the wind is avoided, the sails may be shaped otherwise than is usual in square rigged vessels; for as they always present the same leech to the wind, they may be made by cutting all their gorings in the fore leech, and the straight cloth, in the after leech. On this plan all the sails, which in a square rigged vessel are usually termed square-sails, are made upon the principle of lug-sails, which enables them to stand so much flatter than square-sails can possibly do, that the vessel is enabled to lay nearer the wind.

Fig. 11, shews the construction of the open quadrangular pyramidical mast, and top-mast, as applied to a brig. It would be preferable to make each of the poles which forms the mast of single pieces, whenever the size of the vessel will allow it. The upper ends of the poles are let into stops

or recesses, made in the wooden cap, which has a hole in its center, to receive the top gallant mast, and allow it to pass through the tressel trees affixed to the poles. To the foot of the top-gallant-mast, are fixed cross-trees, which are halved into each other at their crossing in the center, and are secured to the heel of the top-mast, which passes through a mortice hole cut in them, and they are fixed either by a fid or bolt.

In striking the top mast, the necessity of casting off the rigging is thus avoided, the shrouds being affixed to the cross-trees, and these to the top-gallant-mast, and coming down with it: instead of the cross-trees being affixed to the top of the top-mast as usual. These cross-trees are placed at similar angles with the poles, and thus accommodate themselves thereto at any part of their descent, and are thereby kept steady when struck, which allow the top-sail-yard to be confined amidships, in keeping, or furling the sail, and also when it is set.

As this open quadrangular pyramidical mast answers the double purpose of a mast and top-mast, it becomes necessary to introduce a substitute for the mast head, or top of the common mast. This substitute consists of two cross pieces, extending to the four poles near the middle of their height which are supported and braced by angular peices.

By reason of the sails revolving with the mast, instead of around it, as usual, it is proposed to cut away from the canvas in the foot of each top-sail, and top-gallant-sail, a notch or gap: in order to permit those sails to be brought nearly into contact with the sails below them: the gaps allowing the sails to clear the top and top-mast head; by which means, the openings usually made between the sails, and the consequent loss of surface is avoided.

Fig. 12, represents part of a lugger, with an open quadrangular pyramidical mast and lug-sails. To this

description of sails, parallel reefing boards *a*, are adapted, the sectional figures of which are oval. To these reefing boards, the foot or lower edge of each sail is to be attached, and by winding them upon these boards, the sails are furled. In this figure there is also shewn a method of setting a ringtail or studding-sail *b*, to the lug-sail, so that it shall stand upon a wind, and act as one entire sail, this is affected by adding a studding-sail boom to the yard, and hoisting it by two halyards.

The patentee concludes his specification by saying:— "I have thus given examples of various methods of carrying my said improvements into effect. I do not however mean or intend hereby to claim as my invention any of the parts which may already be known, or in use, neither do I mean or intend to limit myself to these methods only, but to avail myself of every mode in which my said revolving masts (which I believe to be entirely new) can be carried into effect.

"Although sails may have been reefed or furled at top, by being rolled around cylinders, yet I believe the idea of reefing or furling them below, upon flat or oval reefing-boards, is new, as well as the manner of working them; and I hereby claim all and every manner of carrying that part of my said invention into effect.

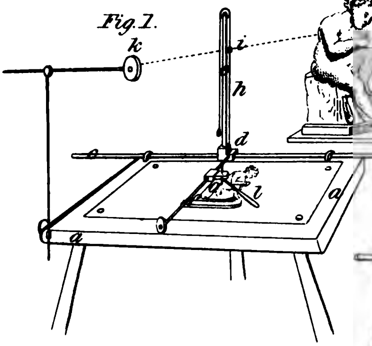
"The manner of striking the top-gallant-masts, by affixing cross-trees to the heels of them, instead of to the head of the topmast, I also believe to be new, and equally applicable to the striking the top-gallant-masts of ordinary vessels, and the top-masts of small vessels, and I therefore claim every means of accomplishing that object.

"I likewise claim every mode of attaching and setting studding-sails, or ringtails, to the sails of vessels of every description requiring them, in the methods and for the purposes described.

[*Inrolled September*, 1825.]

Ronald's Drawing Apparatus.

Fig. 1.



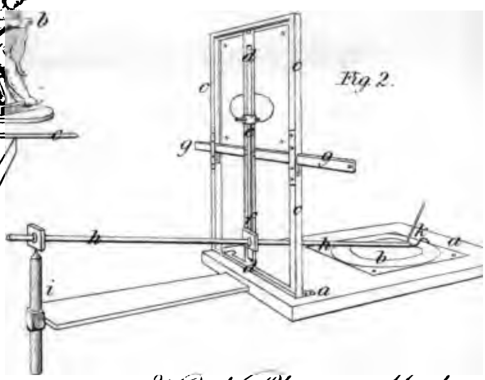


Fig. 2.

Head's Platting Machine.

Fig. 3.

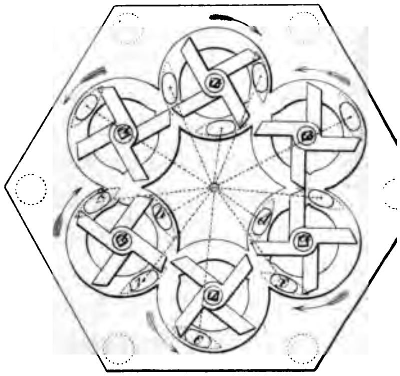


Fig. 7.

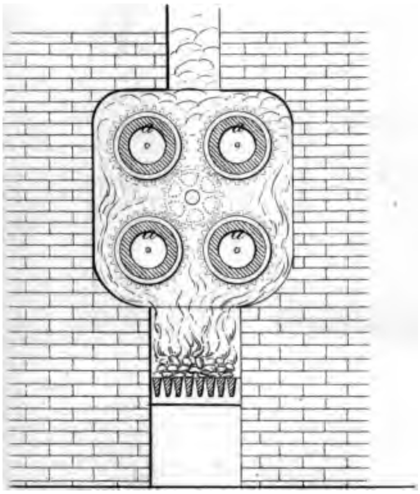
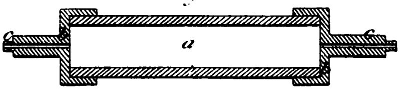


Fig. 6.



Gunn's Impd. Carriage.

Fig. 4.

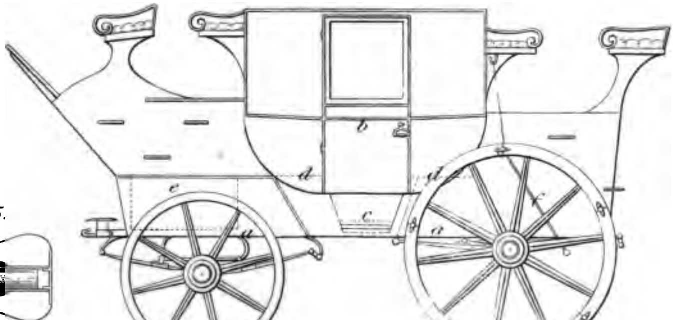


Fig. 5.

 1st August 1826. S. Bellin sculp.

To Francis Ronalds, *of Croydon, in the County of Surrey, Esq. for his Invention of a new Tracing Apparatus, to facilitate Drawing from nature.*

[Sealed 23rd March, 1825.]

This is an ingenious piece of mechanism, to be applied to a drawing board, consisting principally of two moveable rods, upon one of which, a pencil is made to slide: and connected to the carriage of this pencil, is a silken cord, passed over a pulley, the cord having a small bead attached to it. The eye of the draftsman being applied to a fixed aperture, he guides the carriage of the pencil with his hand, in such directions as shall cause the cord to draw the bead along the line of sight intercepting the eye and the different parts of the object placed before the apparatus to be delineated; by which means the pencil is made to trace upon the drawing board, the outlines of the figure, or object in view.

Plate III, fig I, is a perspective representation of the apparatus, attached to a drawing board, *a, a*, standing upon legs; and *b*, is a figure, placed in any convenient situation, the outlines of which, are to be delineated. A long rod *c, c*, sliding in staples, has the socket *d*, of the upright rod *e*, affixed to it; and also into this socket is insetted the end of the rod *f*, at right angles to the former, upon which, rod *f*, the carriage of the pencil *g*, is made to slide. A silken cord *h*, attached to the carriage of the pencil, is passed through a small eye in the socket, and thence over a pulley at top of the upright rod *e*, having a tension weight at its end; and there is a small bead *i*, fixed upon the cord. The eye piece *k*, is attached to the drawing board, and is capable of adjustment by sliding its rods, but is intended to be made stationary previous to beginning a drawing.

The object to be drawn being properly situated, the eye of the operator is to be applied to the small aperture *k*, and taking the handle *e*, of the pencil *g*, in his hand, he moves it so as to cause the cord to draw the bead *i*, over the apparent outlines of the figure, as seen from the aperture *k*. In doing this, the perpendicular movements of the bead are produced by drawing the pencil and its carriage upon the rod *f*, nearer to, or further from, the operator: and its horizontal movements, by sliding the rod *c*, with its upright, and other appendages, to the right or left; the oblique and curved lines being of course performed by the compound movement of the pencil, sliding backward and forward upon the rod *f*, and the rod *c*, carrying the rod *f*, and the upright *e*, sliding laterally in the staples. Thus as the hand of the operator causes the bead *i*, to traverse over the apparent outlines of the object about to be delineated, the point of the pencil traces those outlines in correct perspective, on the paper placed upon the drawing board under it.

Fig. 2, is an apparatus to be employed for producing outlines in correct perspective, from geometrical plans. It consists of a drawing board *a*, upon which the plan *b*, is to be placed, and an upright frame *c*, *c*, where another drawing board is set in a perpendicular position; *d*, *d*, is a bar on which the carriage of the pencil *e*, is to slide up and down in a groove; and the socket *f*, connected by a rod to the pencil carriage, also slides in this groove, and the bar *d*, itself, is made to slide laterally, in grooves at top and bottom of the frame *c*, and is guided by the sliding cross bar *g*, *g*, to which it is attached; *h*, is a straight rod passed through a ball and socket at top of the adjustable standard *i*, and also through another ball and socket *f*, on the upright bar. At the extremity of the rod *h*, the handle and tracer *k*, is attached, and the rod

and the pencil being properly adjusted, and the plan and the blank paper being fastened down to the drawing boards, the apparatus is ready to be put in action.

The operator traces over the lines of the plan *b*, by means of the tracer *k*, attached to the end of the rod *h*, and, as he moves the tracer to the right or left, causes the sliding bars *d*, and *g*, with the pencil, to move laterally against the perpendicular drawing board, and the point of the pencil to delineate the horizontal lines of the plan in perspective; the perpendicular lines being produced by the pencil carriage sliding up and down in the groove of the bar *d*, as the rod *h*, is moved, in bringing the point of the tracer to the upper or lower parts of the plan; and the curved lines are produced by the combination of these two movements.

Thus the outlines of a plan, or elevation of a building, or figure drawn geometrically, upon the horizontal board, may, by tracing it in this apparatus, be copied in correct perspective upon the paper placed on the perpendicular board.

[*Inrolled, May*, 1825.]

An apparatus, designed for the same purpose as the first of these, has been for many years in use for sketching from nature in true perspective, the operations of which, are indeed very like the above: the only difference is, that in the former, the mechanism is something similar to a pentograph placed in a perpendicular position, and the pencil is made to draw the outlines upon a perpendicular board, by the operator passing an acute point along the lines of vision between his eye and the outlines of the object to be delineated.—Editor.

To John Head, *of Banbury, in the County of Oxford, Hosier, (being one of the people called Quakers,) for his Invention of certain Improvements in Machinery, for making Cords or Plat, for Boot and Stay-laces, and other purposes.*

[Sealed 4th November, 1824.]

This is an apparatus by which two series of carriages with bobbins, are made to traverse in opposite directions round a frame, in such zigzag or undulating directions, crossing each other, as shall cause the threads which pass upwards from the several bobbins, to become platted together in the centre. Machines upon a similar principle to this are commonly employed for platting leather, in making the thongs of whips, and the same principle is exhibited in Heathcoat's Platting machinery, Vol. IX. page 395.

The present patentee purposes to construct an hexagonal box, the upper side of which is shewn in Plate III, at fig. 3. This box consists of two flat boards, connected together by pillars at the angles, between which boards the machinery is to be placed for actuating the bobbins. The upper board has six circular recesses cut in it, opening into each other, for the bobbins to pass from one circle to the next, in undulating courses; one set of bobbins proceeding round in one direction, and the other set proceeding in the opposite direction, crossing each others course.

There are six spindles or shafts *a, a, a,* having toothed wheels (not shewn in the figure) fixed upon them below, which wheels take into each other, and one of them being actuated by a toothed pinion on the side, the several wheels with their spindles are made to turn in opposite

directions, as shewn by the arrows, upon each of these spindles at its upper end a cross is affixed, for the purpose of driving round the carriages of the bobbins shewn by dots.

The bobbin-carriages, moving in one direction, are marked *b*, *c*, *d*, those moving in the opposite direction, are marked *z*, *y*, *x*, supposing the rotation of the cross is driving forward the bobbin *b*, it will pass into the next circle, and occupy the place of *c*, and from thence be driven by the revolving cross into the third circle, and occupy the place of *d*, and so on: while the bobbin *x*, will be in like manner driven by the cross into the situation of *y*, and thence to the situation of *z*, and so on.

In this manner the two series of bobbin will be made to travel round the box in the undulating curve, from one circle to the other, and the yarn, thread, silk, or other material passing up from each bottom will meet above in the center, as shewn by the dotted lines, and become twisted or platted into one another, forming a platted cord which will be thence drawn off and coiled upon a reel or bobbin ready for use, and which cord is suitable for boot laces, and stay laces, and other purposes as above stated.

[*Inrolled, March,* 1825.]

To JAMES GUNN, *of Hart Street, Grosvenor Square, in the County of Middlesex, Coach Maker, for his Invention of certain Improvements on Wheeled Carriages.*

[Sealed 14th October, 1824.]

THE improvements proposed under this patent, are so obscurely described in the specification, that we cannot

with certainty, say whether we have rightly understood the patentees intentions. He has arranged his improvements under eight heads, and as far as the specification will enable us, we will describe the leading feature of each; but, as to rendering the whole of the detail intelligible, is quite out of our power.

Plate III. fig. 4, is a side elevation of the carriage, in which most of the proposed improvements are shewn.

The first improvement consists in making the bottom rails, or framing of the coach *a, a,* considerably below the bottom of the door, and which in all coaches hitherto made is said to have been immediately against the door; this therefore constitutes the framing of the boot, and the body of the coach is raised upon it. When the door *b,* opens, the steps *c,* fall out of their recess, and render the space sufficiently high for persons to enter, the floor of the coach being upon the line *a, a,* and the seats at the dotted lines *d, d.* The object of thus constructing the coach is, that the weight of the body may hang low, and in case the carriage should pass through water, an appendage is to be applied to the recess *c,* in which the steps are placed, in order to prevent the water from penetrating to the interior. By this mode of building coaches the timbers are for the most part placed edgewise, which admits of considerable strength and lightness, and very little iron work will be necessary, and a greater space of boot for luggage.

The second feature is the disposition of a safe boot *e,* for depositing banker's packages, and other articles of considerable value. This boot is to occupy the place of what the patentee calls the under carriage of other vehicles, and is to be divided into compartments, by iron partitions, and lined with plates of metal to prevent holes being bored in the sides. It may be made to open in any

part, but the back is to be prefered, and it is to be secured by a padlock.

The third head of the improvements applies to the last mentioned boot also, and is the adaptation of a circular plate with a groove, and other appendages, which are so described, that we cannot understand them. The object appears to be that the axletree of the fore wheels may slide round horizontally, in order to enable the wheels to lock under the coach, when turning curves or angles in the road. This boot is likewise to have a contrivance for receiving the end of the pole, and it is intended to build this description of carriage without a perch.

The fourth improvement applies to the axle-trees of the wheels, and to boxes and other parts adapted thereto, a section of which, is shewn at fig. 5. The arm of the axle-tree is to be hollow, for the purpose of giving strength and lightness; the recesses are to contain oil to relieve the friction, and keep the axle cool; and there are to be pins or screws and collars, to prevent the wheel from coming off.

The fifth proposition is, to hoop the tyre of the wheels as a shoring; how this is to differ from ordinary hooping of the tyre, we dont at all comprehend. It is also proposed, (at least we understand it so) to fix plates on the sides of the rim, to strengthen the wheel.

The sixth contrivance, is a drag to stop the hind wheel of the coach. This is to be made light, and to act with facility; it is shewn in fig. 4, at *f*, with a cord or chain to pull it into action. At the end of the drag there is a claw, or fork, which when let down, takes hold of one of the hooks, or nobs on the side of the wheel, and stops its rotation.

The seventh suggestion, is the adaptation of several springs of different elastic powers, placed one above the

other, for the purpose of affording the same relief, whether the carriage is loaded with a great, or small weight. When the carriage is lightly loaded, the first springs only will be brought into action; as the load is increased, the second, and third, springs begin to play, and when the load is very heavy, so as to overpower the three, cross springs come into action, and bear up the additional load.

The eighth and last feature of the invention, is the adaptation of an alarm to the secure boot, which is to be made upon any suitable plan, but that which is particularly recommended, is altogether so unintelligibly described, that we must decline attempting to explain it.

[*Inrolled, April,* 1825.]

To DANIEL DUNN, *of King's Row, Pentonville, in the Parish of St. James, Clerkenwell, in the County of Middlesex, Manufacturer of Essence of Coffee, and of Spices, for his Invention of an Improved Apparatus, for the purpose of beneficially separating the infusion of Tea or Coffee, from its grounds or dregs.*

[Sealed 30th April, 1825.]

THIS invention, is a pot or vessel for making tea or coffee, having a strainer within, placed at a little distance from the sides and bottom; and a bag suspended in the middle of the strainer, for the purpose of holding the tea or coffee; the object of which, is, that the essence of the tea or coffee, may be more effectually obtained when thus surrounded on all sides by the water in which it is infused.

The pot may be made of such metals, or other materials,

as tea or coffee pots are usually made, and the strainer within, is to be of metal, pierced with small holes: observing that such metal only is to be employed, as will not become corroded by the extract. The bag, intended to contain the tea or coffee, may be of silk, cotton, or other suitable material, and is to be so attached, that it may be ready displaced, in order to wash out the grounds after using. It is also desirable, that a grating should be placed within the bag to keep it distended, while the tea or coffee is pouring out at the spout.

In an apparatus of this description, the patentee considers that the essence of tea and coffee will be more advantageously extracted, than in the ordinary tea and coffee pots; as the water will be enabled to insinuate itself more completely through the material infused, and the percolation be more advantageous than the ordinary mode of obtaining the extract.

[*Inrolled, June,* 1825.]

A patent was granted in 1817, to Colonel Ogle, for an improved tea and coffee pot, and if we mistake not the construction of the apparatus then proposed was the same, or very nearly so, as that above described.--EDITOR.

To SIR WILLIAM CONGREVE, *of Cecil Street, Strand, in the County of Middlesex, Bart., for his Improved Gas Meter.*

[Sealed 14th December, 1824.]

THE subject of this patent can hardly be called an invention, it is but an idea, and the patentee has all

through his specification treated it as such, instead of embodying his views into a tangible something, which might be made, used, or vended.

He commences by observing, that, gas is of that subtle and elastic nature, that it is next to mpossible to measure its volumes with accuracy, in any of the gas meters at present in use: as they all of them act by the mechanical pressure of the gas, which is too delicate and equivocal a criterion to be depended upon. He therefore proposes instead of measuring the gas employed for illumination by its volume, to measure it by the time it is passing through a given aperture. For instance, if the gasometer expels the gas under one uniform pressure, it will pass at a given density, with a certain velocity (which may be ascertained) through an aperture; and a cock being opened in the pipe that supplies the burner, (the area of the orifice of which is known) the quantity of gas passed through this aperture, in any space of time, may be more readily determined than by any other gas meter heretofore employed.

The quantity of gas therefore being known, which will under existing circumstances, pass through the orifice of the cock in one hour, it is only necessary for the seller of the gas to ascertain how long the cock has been open, and to charge for the quantity of gas which would have passed through the orifice in that space of time; and if the consumer has neglected to burn it, that is his concern, and not the gas companies.

In order therefore, to ascertain exactly how long the cock of a gas burner has been open, the patentee proposes to apply a watch movement to the cock, which may be constructed to go for one hundred hours, or a thousand hours, or any other space of time. This is to set itself going through the agency of levers, whenever the cock is opened, and to stop, when the cock is closed. Hence an

inspection of the dial of this watch will always show how many hours the gas cock has been open, since it was last set, and by a very simple calculation what quantity of gas has passed through the cock.

It will be obviously the most simple mode to attach a watch movement to the cock of each burner, but if this is not convenient, where there are several burners branching from one pipe, the pipe may be divided into several passages, and the cock opened partially, to allow the gas to pass through one, two, three, or more passages, as may be required. In this case it is recommended, to have a lever connected to the cock, which shall move a regulator, and produce a pressure upon the balance spring of the watch movement, for the purpose of causing it to go only half, or a quarter as fast as when the cock is completely open; and the distance which the cock is to be turned to open one, two, or three channels, may be shewn by a graduated scale attached to the side of the pipe.

These are the views of the patentee, but as he has not exhibited, and does not profess to claim any particular apparatus, we do not see how the mere circumstances of ascertaining the quantity of gas, which will pass through any given aperture, in a given time, under a certain pressure, can possibly constitute the subject of a patent: or how he can avail himself of the exclusive use of such knowledge. It is true the patentee might have constructed an apparatus of the kind above hinted at, and have maintained its exclusive use under this patent, for the purposes of shewing, and regestering the space of time that the gas cock had been open, and by inference the quantity of gas passed, but as that is not the case, the patent right appears to be perfectly imaginary.

[*Inrolled June,* 1825.]

To JOHN THOMPSON, *of Vincent Square, Westminster, and of the London Steel Works, Thames Bank, Chelsea, in the County of Middlesex, and* JOHN BARR, *of Hales-owen, near Birmingham, Warwickshire, Engineer, for their having Invented, and brought to perfection certain Improvements in producing Steam, applicable to Steam Engines or other purposes.*

[Sealed 21st June, 1825.]

THESE improvements consist in the peculiar construction and arrangement of vessels, which are to be employed as boilers or generators of steam. Plate III, fig. 6, shews the sectional form of one of the generators, which is constructed of an hollow iron cylinder *a*, closed at both ends by caps *b*, *b*, and these caps are closely fitted and luted on, so as to produce steam-tight joints. The caps have cylindrical pieces *c*, *c*, extending from them, which are intended as axles for the generator to revolve upon; and through each of these axles, there is a passage, one for the admission of water, the other for the discharge of steam.

Several of these cylindrical generators are to be placed in a furnace, as at fig. 7, where they are to be made to revolve upon their axles, in order that the fire may play round them uniformly. The water is to be injected into each of the generators by means of a forcing pump, through one of the hollow axles, and this operation is to be carried on during the whole time that the generators are revolving, by the attachment of suitable stuffing boxes to the ends of the hollow axles; there being a valve to each opening inwards, to admit the water, but prevent its return.

The rotation of the generators is proposed to be affected by means of toothed-wheels affixed to their axles on the outside of the furnace, which are to be put in motion by a central toothed-wheel taking into them, as shewn by dots in fig. 7. Any convenient rotatory power being connected to this central wheel, will cause the cylinders to revolve; or they may be made to reciprocate, if that motion should be prefered; the simple object being to allow the fire to act with force on all parts of the surfaces of the cylinders.

In this way steam is to be generated, and it is to pass through the hollow axle, opposite to that at which the water was admitted, into a vessel similar to a gasometer, where being stored, it may be delivered as required, by a suitable valve, to the induction pipe of a steam engine, or to any other apparatus to which steam is required to be communicated.

These generators may be made of any material suited to the purpose, and may be employed singly, or combined, as shewn at fig. 7, or in any other number or way; they may be made to turn either in horizontal, vertical, or oblique direction (guarding the pivots from the fire), as the rotatory action of the boilers or generators in whatever position, is the subject claimed as the new invention; and they may be employed for the production of either high or low pressure steam, varying of course their strength according to the pressure intended to be exerted.

[*Inrolled December*, 1825.]

Novel Inventions.

Burstall and Hill's Steam Carriage.

We have still delayed the publication of this invention (as of several others), in the expectation of seeing something realized of which a satisfactory account might be given, but we have only the following to communicate yet, which is extracted from a letter of Mr. Burstall's received by us within these few days.

" Since we had the pleasure of your company at Leith, we have made many improvements, and at last are in a fair way to produce a complete machine. We have had much trouble with the boiler, and though we knew the last we made was very defective, yet we determined to make a trial, which took place in the night ten days since, you will understand the difficulty we laboured under when I tell you, that our steam could not be kept up more than two minutes at a time, yet we got her with care, to travel at the rate of full seven miles per hour, and as the steam by that time was getting very low, I am satisfied with a proper boiler double that velocity will be quite easy.

" The steam makes no alarming noise, and as the coach will be better for the roads than the horse coaches, we are now sure of full success: Mr. Hill is in England, superintending the making a boiler, which will put us all right.

" My view is, that, it may be six weeks, or two months before we shall be making our complete machine public."

Mr. Adam Eckeldt is stated to be the first who employed the following successful mode of hardening steel dies. He caused a vessel, holding 200 gallons of water, to be placed in the upper part of the building, at the height of forty feet above the room in which the dies were to be hardened; from this vessel the water was conducted down through a pipe of one inch and a quarter in diameter, with a cock at the bottom, and nozzles of different sizes, to regulate the diameter of the jet of water. Under one of these was placed the heated die, the water being directed on to the center of the upper surface. The first experiment was tried in the year 1795, and the same mode has been ever since pursued (at the Mint) without a single instance of failure.

By this process, the die is hardened in such a way as best to sustain the pressure to which it is to be subjected; and the middle of the face, which by the former process was apt to remain soft, now becomes the hardest part. The hardened part of the die so managed, were it to be separated, would be found to be in the form of a segment of a sphere, resting in the lower softer part as in a dish; the hardness, of course gradually decreasing as you descend towards the foot. Dies thus hardened preserve their forms until fairly worn out.—*Franklin Jour.*

A Mons. Georges de Buquoy, is said to have invented a steam engine, without a boiler; the heat necessary for the formation of steam, is generated by friction, but the method of applying the heat so obtained, is not yet made public.—*Bull des Science.*

Polytechnic and Scientific Intelligence.

ROYAL SOCIETY.

[Continued from preceeding Vol. page 324.]

Feb. 2.—A paper was read, On the Magnetizing Power of the more refrangible Rays of Light; by Mrs. Mary Somerville: communicated by William Somerville, MD. F.R.S.

In this paper, Mrs. Somerville first mentions some preceding statements on the subject: Prof. Morichini, of Rome, announced that he had succeeded in magnetizing a needle, by exposing it to the violet ray of the solar spectrum; the experiment was repeated without success by Prof. Configliachi at Pavia, and M. Berard, at Montpellier; Dr. Brewster states, in his Treatise on New Philosophical Instruments that Sir H. Davy, and the late Prof. Playfair, witnessed a successful repetition of it, in Italy; but from the indistinct and contradictory results that had been obtained even in that country, it had been concluded that the experiment was still more unlikely to succeed in our own northern climate, and no further elucidation of the subject had been obtained.

The unusual clearness of the weather, however, last summer, had induced Mrs. S, to institute some experiments on the subject; which she next proceeds to detail.

An equiangular prism of flint-glass, being placed in an aperture in a window-shutter, a sewing needle, about an inch long, which had been previously ascertained to be devoid of magnetism, by its attracting indifferently either

pole of a magnetized needle, was exposed to the violet ray of the spectrum, thrown on a pannel, at the distance of about five feet. One half of the needle was covered with paper, as the author did not deem it likely that polarity would ensue from the action of the light, if the whole of the needle was uniformly exposed to its influence. In about two hours the needle became magnetized; the exposed end being found to be the north pole. The experiment having been many times repeated with the violet ray, and always with success, the blue and green rays of the spectrum were next ascertained to produce a similar effect, but in a less degree, and the indigo ray in a degree nearly as great as the violet. The yellow, orange, and red rays, had no effect whatever on the needles exposed to them, even when the experiments were continued for three successive days; nor was any magnetism developed by the calorific rays, which showed that heat had no share in causing the results.

Pieces of clock and watch-springs, about an inch and a half long, and from an eighth to a quarter of an inch in width, previously ascertained to be unmagnetic, or reduced to that state by heating them, where exposed in the same manner to the more refrangible rays, and they also were rendered magnetic, the exposed ends always becoming north poles. They appeared indeed to be more susceptible of magnetization than the needles, probably on account of their greater extent of surface, and blue colour. Bodkins where not affected, owing perhaps to their greater mass. When the violet ray was concentrated, by means of the large lens employed by Dr. Wollaston, in his experiments on the chemical rays, magnetism was imparted to steel in a shorter time than by that ray in its ordinary state.

It was found to be unnecessary to darken the room for these experiments, it being sufficient to throw the spectrum on a part of the room, where the sun's rays did not shine.

Mrs. Somerville, next tried the effect of the solar rays as transmitted by blue glass; and on needles being exposed, half covered as before, under glass, coloured blue by cobalt: care being taken that no magnetic substance was present, they also were magnetized. It was not ascertained whether the rays which produce chemical charges had any share in this effect; for by subjecting two slips of paper, dipped in solution of muriate of silver to the action of the sun's rays, under the blue, and under common white glass, both were blackened in the same time, and to the same degree. Needles exposed in the same manner under green glass were also magnetized.

By inclosing needles in pieces of green and blue ribbon, half of each being covered with paper, and hanging them up in the sun for a day, behind a window-pane, they likewise acquired polarity; the exposed ends becoming north-poles as usual. But no effect was produced, by the same treatment, on needles inclosed in red, orange, or yellow silk.

Throughout the experiments detailed in this paper, with a very few exceptions, seemingly attributable to a predisposition to magnetism too slight to be detected, the exposed end of the needle, &c. employed, became the north-pole. From ten to twelve and one o'clock, appeared to be the most favourable time for the experiments. As the season advanced, the magnetism acquired was less permanent, or the needle required exposure for a longer period to render it permanent, and the effect in general decreased. The author infers from the whole, that the

more refrangible rays of light have the property of imparting magnetism.

The reading of a paper, was also commenced on the Action of Sulphuric Acid upon Naphthaline; by M. Faraday, Esq. F.R.S.

Feb. 9.—James Holman, Esq. was admitted a Fellow of the Society; and the reading of Mr. Faraday's paper was continued.

Feb. 16.—Charles Lyell, Esq. F.L. and G.S. and Dr. J. A. Ogle were respectively admitted Fellows of the Society, the name of John Hawkins, Esq. ordered to be inserted in its printed lists; and the reading of Mr. Faraday's paper was concluded.

In consequence of the peculiar action of sulphuric acid upon certain hydrocarbons, observed by the author, and refered to in a late paper on New Compounds of Carbon and Hydrogen, he was led to examine the effect produced by treating various substances with sulphuric acid, and amongst others, naphthaline. It was soon found that a new compound was produced, very peculiar in its composition and properties, the existence of which accounted for the different statements made by various writers respecting the mutual action of the two substances.

Cold pulverised napthaline, having been put into three or four parts of cold concentrated sulphuric acid, and agitated, and left for several days, was gradually dissolved, forming a red mixture of a crystaline and fluid matter, which, upon the addition of water, dissolved almost entirely, yielding a solution of a peculiar bitter acid taste.

Upon fusing about two parts of napthaline with one part of strong sulpheric acid in a flask, and agitating them together, a perfect mixture was obtained, but which on standing separated, whilst fluid, into two portions, both deep-red, but the heavier much more so than the lighter.

Being poured into tubes, retained hot for some time to admit of separation, and then allowed to cool, both substances crystalized, and became opaque and deep-red. When separated they were examined, the upper was crystaline, and hard like napthaline; it was sapid, and being heated with a little water, was separated into nearly pure napthaline, which floated, and an acid which dissolved in the water: the lower substance was much heavier than the former, softer, chrystaline, deep-red in colour; exposed to the air it became moist on the surface from the commencement of deliquescence, and then harsh from the separation of napthaline. It was highly bitter, and burnt with much flame. When rubbed with water, about a fourth part of its weight of napthaline separated, the rest being soluble, and similar to that extracted from the lighter substance.

Upon neutralizing some of this acid with potash, and digesting the salt formed with alcohol, it was found that the alcohol upon evaporation left a white, dry, and chrystaline salt, which, when heated in the air, burnt with much flame, and which, being soluble in alcohol, and not precipitating salts of barytes and lead, was strongly distinguished from a sulphate.

In this way it appeared that sulphuric acid and naphthaline might be combined, producing a new acid; which as it existed in large quantities in the heavier substance, mixed with free sulphuric acid, was now to be separated from it, and obtained in a pure state. For this purpose, a specimen of native carbonate of barytes was selected, and rubbed to powder with the solution of the impure acid, until it had been rendered neutral; the water was found to contain a soluble barytic salt, and upon washing the solid residue at the bottom of the mortar with more water, an additional portion of the same salt was obtained, the sulphate of barytes, and excess of carbonate remaining

untouched. The barytic salt in solution was now decomposed, by the addition of such quantity of sulphuric acid as would precipitate all the barytes, and leave no excess : so that by filtration a solution of the new acid was obtained. It was colourless and transparent, did not precipitate salts of lead or barytes, and being carefully evaporated, gave ultimately a solid crystalline acid, deliquescing in the cold air, fusing at 212°; by a higher heat charring, and burning with much dense flame.

The salts which this acid forms with bases, are all soluble in water and in alcohol; the solutions upon evaporation yield the white salt in a more or less crystalline state, generally unchangeable in the air, when decomposed by heat in tubes giving off much naphthaline and vapour, and leaving a mixture of sulphate and sulphuret. When heated in the air on platinum foil, they burn with much dense flame, almost like naphthaline.

The analytical experiments were made with the salt of barytes, it being a very constant and permanent substance, capable of being dried perfectly by a heat of 212°, and not undergoing material decomposition below 500°. The quantity of barytes in the salt was ascertained by burning a given weight in a platinum crucible, and heating the residue twice or thrice with the addition of sulphuric acid; the sulphate of barytes indicated the quantity of barytes present. The quantity of sulphuric acid present was ascertained by mixing a given weight of the salt with carbonate of barytes and oxide of copper, heating the mixture to redness in a tube, then acting on the residue by nitro-muriatic acid: collecting the quantity of sulphate of barytes thus produced, it indicated the proportion of sulphuric acid. The carbon and the hydrogen were estimated in the usual way by heating the salt with oxide of

copper. By this analysis the elements of the salt approximate closely to

1	proportional of barytes - - - - -	78
2	ditto sulphuric acid - - - - - -	80
20	ditto carbon - - - - - - - - - -	120
8	ditto hydrogen - - - - - - - -	8

Abstracting the barytes, the remaining elements indicate the composition of the pure acid, which thus appears to contain above three-fifths of hydrocarbon; and in this state of combination, the powers of the sulphuric acid are so far reduced or neutralized by the presence of the hydrocarbon as to have the saturating power of one proportional only, though two proportionals are present—a fact also previously observed by Mr. Hennel, in the substance called sulphovinous acid.

The name of *Sulpho-napthalic acid* has been given to this compound, as sufficiently indicating its source and nature, without involving theoretical views.

A paper, On the Circle of Nerves which connect the Voluntary Muscles with the Brain; by Charles Bell, Esq. F.R.S.E. communicated by the President, was also read.

SOCIETY OF ARTS.

Proceedings of their Committees—(continued from XIth Volume, page 377.)

Committee of Mechanics.—Nov. 17th.—A German boring bit, having an open spiral down nearly to the point, and the cutting surfaces lateral and oblique. —A French drawing pen, spindle shaped, the ink being contained within. Both these were presented by Mr. Donkin.—Maraud's transparent sun dial, to hang in a

window, with a conical hole behind for the sun to shine through on to its graduated face.—Trenaman's spring hammer for stamping;—a frame for holding a rod, while bolts of any length are cut off by a handsaw;—a lever to support a weighted scale, while the other scale is filling;—and a mode of cutting timber for stern-rails of ships.

24th.—Jenour's mode of charging cartridges with shot for fowling, the shot being enclosed in a small copper box, which carries the charge a considerable distance before it disperses.—Smith's mode of curing smoky chimneys, by an iron cap having holes at top guarded by lateral masks.—Jenning's mode of cooling worts by means of a zigzag channel made through the cooler which shall be the draft passage for a furnace.

25th.—Good's blinds for semi-circular windows. The blind folds like a fan, and lodges when closed in the radius of a semicircle, and is drawn open by a string on the side.—Fisher's percussion gun lock, having a hollow spring cock cover passing over the nipple and copper cap, and when the piece is discharged, the cock strikes the cover, and the force being communicated to the priming it explodes.—Bewsher's substitute for a cobbler's lapstone, viz. a block of iron.—Bell's marine cravats to prevent drowning, an oil skin collar filled with cork.—Hallot's window-frame, the cords of which are attached at bottom; and when the beads are removed the sashes may be turned over for the purpose of cleaning.

Dec. 1st.—Simmon's snow plough, a very large wedge formed frame, running upon wheels, the horses being behind, pushing the plough forward.—Scott's mode of preventing ships from sinking, by having floating sluice gates on the sides of the ship, for the water to discharge itself as the ship rolls.—Collet's plyers for cutting and pinching into form at one operation, small pieces of tin, to

ASTRONOMICAL SOCIETY OF LONDON.

May 12.—A paper by the Astronomer Royal was read, containing an explanation of the method of observing with the two mural circles, as practised at present at the Royal Observatory. The principal object of the method explained in this paper is to diminish as much as possible the inaccuracies occasioned, even in the most perfect instrument, by rapid and partial changes of temperature. In the Greenwich system of observations, assistance from the spirit-level or plumb-line, or indeed from any previous verification, is rejected altogether. Two circles are employed simultaneously, each of which is furnished with six microscopes, which it is desirable should be placed at *nearly* equal distances on the limb; and previous to observation each circle is placed *nearly* in the plane of the meridian, and *nearly* perpendicular to the horizon. Each circle is provided with an artificial horizon of mercury, so as to command the greatest possible portion of the reflected meridian.

The first part of the process consists in observing a number of stars simultaneously with each instrument, either by direct, or by reflected, vision; the object of this is to determine the exact quantity that one instrument marks more or less than the other, when both are directed to the same object. This is determined not by a single observation, but by a great variety; thus obtaining the quantity denominated *the mean difference* for every 24 hours.

In the second part of the process, a series of stars is observed *reciprocally*, that is, the direct image of a star by one instrument, at the same time that its reflected image s observed by the other. This, combined with the results of the previous process, in which the *mean difference* serves the same purpose as the index error in Hadley's

sextant, enables the observer to ascertain the altitude; with which is likewise obtained the knowledge of the position of the horizontal diameter of each instrument. The observer, however does not rest contented with a single determination of one diameter; but must in a similar manner, from altitudes, observed on various points of the arc, and by taking sometimes the direct, and sometimes the reflected observation with the same instrument, endeavour by every possible variety to obtain the maximum of precision of which the method is capable.

The position of the horizontal diameter of each instrument being thus deduced from a mean of all the preceding experiments, sufficient data are obtained for computing the places of those stars that have been observed in the first place of the process, and employed in computing the mean difference; because without the knowledge of the position of their horizontal diameters, the instruments, with respect to the stars in question, give nothing but the differences of declination, but such position being known, their altitudes can be accurately determined.

The Astronomer Royal terminates his paper, by pointing out the principal advantages of the method described.

There were next read Extracts of three letters addressed by M. Gambart, Director of the Observatory of Marsailles, to James South, Esq. respecting the discovery and elements of the orbit of a comet, supposed to be the same with that, or those, of 1772 and 1805. M. Gambart first presents the summary of his observations of this comet from the 9th to the 21st (inclusively) of March this year. He then exhibits the elements as computed from these observations upon the parabolic hypothesis: viz.

Passage of the perihelion, March 1826, 18,94 days, counting from midnight.

Perihelion distance	. .	0·961
Long. perihelion	. .	104° 20' 0"
Long. ascend. node	. .	247 54 10
Inclination	. . . .	14 39 15

Motion direct.

These elements were communicated March 23rd:—a week after, the elliptic elements deduced from the same observations were transmitted, and are as follows: viz.

Passage of the perihelion, March 1826, 19,5998 days counting from midnight

Semi-axis major	. . .	3·567
Excentricity	. . . .	0·74187
Log. mean motion	. .	2·7326487
Long. perihel.	. . . .	108° 54' 19"
Long. asc. node	. . .	249 55 23
Inclination	. . . . .	13 50 47

Motion direct,

Periodic time . . . . 6·567 years.

The same elements, M. Gambart observes, represent almost exactly the observations of the comets of 1772 and 1805; whence the identity of all three is infered.

The reading of Mr. Herschel's paper on Double-stars commenced at the last meeting, was continued.

French Patents,

FIRST QUARTER 1826.

To B. A. Vincard, Quai aux fleurs, Paris, for his invention of a Stuff he calls "Mexico françois." 6th January—5 years.

— P. Lupin & Co. rue Lepelletier, Paris, for their invention of a machine called "Epeutisseuse", to take out the nobbs and inequalities from the surface of Stuffs, &c. 5th January—5 years.

To L. Carrette, Lille, Department North, for improvements and additions to his Patent of December 31st, 1823, for a Portable lanthern, with moveable cylinders, &c.

— J. C. Barnett, Consul General of the United States, rue Plesmet, Paris, for his importation of a mode of conveiting Iron into Steel. 12th January—15 years.

— F. X. Saint Etienne, rue de la Combe, Paris, for his invention by means of a mechanical sieve to separate the flour-meal of potatoes from its parenchyma. 12th January—5 years.

— C. F. Brasseux, engraver, Palais Royal, Paris, for his improvement and addition to his patent of the 1st December, 1825—5 years, for a seal with five faces, susceptible to be augmented.

— N. E. Pigeau, perfumer, cour Batare, Paris, for his invention or mode of extracting Castor oil. 12th January—5 years.

— B. Large, quay Peyrollerie, Lyons, for his invention and improvement of Steam Engine Boilers. 20th January—15 years.

— F. Reborel, rue Trigame, Marseilles, for his invention of a Saw, he calls an endless Saw. 20th January—10 years.

— J. Fallatieu, rue Joubert, Paris, for his invention and improvement in manufacturing Bar Iron. 20th January—5 years.

— F. N. Rimbert, vieux Marchè, St. Martin, Paris, for his invention of a mechanical Lamp. 20th January—5 years.

— P. Arnaud, represented by Mr. Deville, rue Grenille, St. Honoré, Paris, for an improvement and addition to his patent of the 30th June, 1819, for 5 years, for machinery to manufacture Carriage Wheels, prolongation to 15 years.

— J. Terrou, rue Rosiere, Lyons, for his invention of a machine to throw Silk. 26th January—5 years.

— J. B. B. Laignel, Lyons, for an addition and improvement, to his patent of July 22nd, 1825, for 15 years, for his system of navigation on rapid rivers.

— T. Sharp, of Manchester, for his importation of an improved "Mule-jenny." 26th January—15 years.

— J. M. Cordier, at Bezieres, Department Herault, for a double acting pump. 26th January—5 years.

— Fouache Aine, Shipwright at Havre, for his invention in constructing crossed planked vessels. 3rd February—10 years.

— R. Badnall, Senr. of Leek, Staffordshire, for additions and improvements to his patent of November 27th, 1823, for a process in tanning hides.

— A. Córront, at Mr. Giraud, rue Casseville, Lyons, for additions and improvements to his patent of July 25, 1825, 10 years, for a loom for weaving silks, &c.

— N. G. Duvoir, rue du Hussoic, Paris, for his invention of a bedstead, to extend the vertebral column. 10th February—10 years.

To Etienne Mariott and Berthault, civil engineers, at Chalons Sur Saone, for their invention of building roofs, seperations, &c. fire proof. 10th February—15 years.

— G. M. Finot, at Mr. Laligant, rue Meslée, Paris, for his invention of pasteboard razor straps. 10th February—10 years.

— J. Tulloch, of London, for his importation of a mechanical saw, to cut marble, &c. 10th February—10 years.

— C. Mahiet, gunsmith at Tours, for his invention for an improved gun to be discharged by percussion. 10th February —5 years.

— Dumon, Brothers and Poitevin, at Pont de Bordes Department Lot and Garonne, for their invention of a portable distilling apparatus, and condensing without the assistance of water. 10th February—10 years.

— J. J. Lepacete, clockmaker, rue St. Honoré, Paris, for his invention of two machines to regulate the combustion of Gas. 10th February—5 years.

— W. A. G. Barnet, rue Plesmet, Paris, for his importation of new methods to manufacture hats. 10th February—15 years.

— J. L. Boucareet, rue de Clery, Paris, for his invention to manufacture inalterable plates for painting. 10th February—10 years.

— H. K. Duffaut, rue Louis le Grand, Lyons, for his importation of a new Piano-forte. 10th February—10 years.

— J. Archard & Co. rue de la Gerbe, Lyons, for their invention and improvements of portable baths. 10th February—5 years.

— B. A. Lenoir, quay de la Megesserie, Paris, for his invention and improvement, of a process to produce and preserve Ice. 19th February—10 years.

— E. Allen and Vanhooten, rue de l' Echiquier, Paris, for their invention of a portable saw, for marble, &c. 15th February—10 years.

— L. G. Warnceke, at Nancy, for his invention of a musical instrument, he calls, "Guitare-basson." 24th February—5 years.

— Joanne Freres Dijon, for additions and improvements to a patent of 8th December, 1825, of 15 years, for a machine to drive boats, &c. by the power of the Steam.

— J. V. Bouchy, rue Faussès, St. Germain, Paris, for improvements and additions to his patent for machinery to manufacture wire nails. 6th October, 1825—15 years.

— J. Smith, London, for his importation of a combination to extract the wholesome parts from hops and malt. 24th February—10 years.

— P. Berrard, at Lunel, Department Herault, for additions and improvements to his patent of August 18th, 1825—5 years, for an apparatus to prove spirits of wine.

— J. A. Courtois, rudes deux-portes St. Sauveur, Paris, for additions and improvements to his patent of 18th August, 1825, —5 years, for manufacturing of bricks.

— N. Duvoir and Co. rue du Housseri, Paris, for their importation and improvement of suspended roads. 24th February—10 years.

— J. F. Lechartier, rue Croix des petits Champs, Paris, for his invention of a machine to manufacture wire nails. 24th February—10 years.

— J. Collier, rue Richer, Paris, for additions and improvements to his patent of the 31st December, 1823, for a Power-loom to weave woollen cloth.—15 years.

— F. Rouard, rue de Jour, Paris, for his invention of, and im- improvements in manufacturing bricks. 3rd March—5 years.

— D. Rodier fils, at Nimes, for his invention of a peculiar kind of work, machinery in silk, cotton, wool, &c. 3rd March—15 years.

— Lemarchand Freres Cantelue, Seine Inferiuere, for their invention of a drying room by heated air. 3rd March—5 years.

— Margeridon and Frossard, rue St. Lazare, Paris, for additions and improvements to their patents of 28th December, 1822—15 years, for an articulated boat.

— C. d'Aiguebelle, rue de l'Université, Paris, for his invention of reproducing in lythographic print, vegetables, flowers, &c. 3rd March—5 years.

— O. Pecquuer, Paris, for additions and improvements to his patent, 2nd November, 1825—10 years, for his toothed-wheel gearing into a chain.

— W. Powell, of Raglan, Monmouth. England, represented by Mr. Albert, rue Neuve, St. Augustin, Paris, for additions and improvements to his patent of 22nd July, 1825—15 years, for a blowing machine.

— A. M. Bertaux, rue St. Martin, Paris, for his invention, to prevent Coaches from upsetting. 11th March—10 years.

— C. Dronsart, rue Grand Priuerè, Paris, for his invention of a system of navigation, he calls, "Antheletique." 17th March —15 years.

— The Count de la Martigiere, quay Voltaire, Paris, for his invention of a mechanism to drive boats upriver, he calls, "Vat-amont." 17th March—10 years.

— L. Precourt, rue de Clery, Paris, for his importation of a system of machinery to spin combed wool. 17th March—15 years.

— J. P. Weydemann, a Versailles, for his invention of a Vehicle, he calls, "Caleche Weydemann." 25th March—5 years.

— J. Nicholson, rue Forrès Montmartu, Paris, for his importation of a machine to guide to the surface of the spindle of cotton, silk, &c. 25th March—15 years.

To U. Sartoris, rue Chauséu d'Artin, Paris, for his importation of a new system of canal locks. 25th March—15 years.
— N. Charroy Boulevard, du Temple, Paris, for his invention of a mechanism, he calls, "the Guide to the Spinner"—29th March —5 years.
— J. Masterman, of London, for additions to his patent of the 8th July 1825, 10 years, to draw wine into bottles.
— A. Dussargey, rue des Bouchers, Paris, for his invention of a substance he calls "gallote de tannin," as a substitute for astringants in dying. 25th March—5 years.
— B. Large, quay Peyrollerie, Lyons, for additions to his patent of 20th January—15 years, for two systems of Engine Boilers.
— L. L. Paillette, rue Contrescarpe, Paris, for his invention of Shoes, he calls "Ligno-metallic." 31st March—5 years.
— P. Chapper, rue Michandiere, Paris, for additio s to his patent 19th May, 1824—15 years, for a system of roads.
— C. Dugueyt, rue Neuve, at Lyons, for his importation of a power loom. 31st March—5 years.
— D. Redmund, London, represented by Mr Albert, rue Neuve, St. Augustin, Paris, for his importation of improvements in the constructions of vessels. 31st March—15 years.

New Patents Sealed, 1826.

To Thomas Halahan, of York Street, Dublin, Lieutenant in the Royal Navy, for his invention of machinery or apparatus for working Ordnance—Sealed 22nd June— —6 months.

To Louis Aubrey, of Two Waters, in the county of Herts, engineer, for his invention of an improvement or improvements in the web or wire for making paper— 4th July—4 months.

To John Poole, of Sheffield, in the county of York, shop keeper, for his invention of certain improvements in the steam engine boilers or steam generators applicable also to the evaporation of other fluids—4th July—6 months.

To Daniel Freeman, of Wakefield, in the county of York, sadler and harness maker, for his invention of improvements in measuring for and in making collars, for horses and other cattle—4th July—6 months.

To Peter Groves, of Liverpool-street, in the City of London, Esq. for his invention of certain improvements in manufacturing and making white lead—4th July—6 months.

To Robert Warnum, of Wigmore-street, Cavendish-square, in the county of Middlesex, piano-forte maker, for his invention of certain improvements on piano-fortes —4th July—2 months.

To Peter Groves, of Liverpool-street, in the City of London, Esq. for his invention of certain improvements in making paint, or pigment, for preparing and combining a substance or material with oil, or turpentine, or other ingredients—14 July—2 months.

To Benjamin Lowe, of Birmingham, in the county of Warwick, gilt toy manufacturer, for his invention of certain improvements in useful and ornamental dressing pins —14th July—2 months.

To John Guy and Jacob Harrison, both of the parish of Workington, in the county of Cumberland, straw hat manufacturers, for their invention of an improved method of preparing straw, and grass, to be used in the manufacture of hats and bonnets—14th July—6 months.

To John Palmer de la Fons, of George-street, Hanover-square, in the county of Middlesex, dentist, and William Littlewart, of St. Mary Axe, in the city of London, mathematical instrument maker, for their invention of an improvement in securing or mooring ships, and other floating bodies, and apparatus for performing the same—14th July—6 months.

To Edward Bayliffe, of Kendall, in the county of Westmorland, worsted spinner, (being one of the people called Quakers) for his invention of certain improvements in the machinery used for the operations of drawing, roving, and spinning of sheep, and lamb's wool—14th July —6 months.

To John Lane Higgins, of Oxford-street, in the county of Middlesex, Esq. for his invention of certain improvements in the construction of cat blocks, and fish hooks, and in the application thereof—14th July—6 months.

METEOROLOGICAL JOURNAL, JUNE AND JULY, 1826.

1826.	Thermo. Max	Thermo. Min.	Barometer. Morn.	Barometer. Even.	Wind.	Weather.
JUNE.						
24	79	56	30,23	30,18	E.	Fair—clear
25	80	60	30,18	30,12	E.	Ditto—ditto
26	82	61	30,07	30,—	S. E.	Ditto—ditto
27	87	65	29,95	29,87	S.—S. W.	Viol. thund. storm, hail & rain, 4½ in.
28	80	65	29,89	29,95	S. W.	Fair—clouds—thunder
29	78	65	29,98	30,—	W.—N. W.	Fair—clear
30	80	65	30,—	29,99	N. E.—W.	Ditto—ditto
JULY.						
1	76	65	29,99	30,—	S. W.	Cloudy—slight showers—thunder
2	78	64	30,04	30,06	N. W.	Fair—clear
3	82	65	30,06	30,03	S. W.—S. E.—S.	Ditto—ditto
4	81	65	29,96	29,88	S. E.—S.	Ditto—ditto
5	80	69	29,75	29,75	S. W.—S.	Ditto—ditto—thunder
6	81	65	29,78	29,73	S.—S. W.	Ditto—ditto
7	80	66	29,72	29,60	N. W.—W.	Ditto—ditto
8	76	63	29,60	29,57	S. W.	Ditto morning—slight rain—night
9	77	65	29,58	29,57	S. W.—W.	Fair—clear
10	71	64	29,62	29,67	W.—N. W.	Fair—cloudy
11	74	62	29,68	29,74	W.—N. W.	Ditto—ditto
12	71	62	29,72	29,63	S. W.	Ditto—ditto—shower
13	72	61	29,58	29,50	S. W.	Cloudy—wind and rain ¼ in.
14	72	60	29,60	29,67	W.	Sun and clouds
15	70	61	29,71	29,72	W.—S. W.	Ditto—slight showers
16	67	56	29,65	29,71	W.—N.	Cloudy—rain—¼ in.
17	72	56	29,80	29,81	N.—N. W.	Fair—clear
18	73	58	29,81	29,75	W.	Ditto—cloudy
19	66	60	29,76	29,83	N. W.—N.	Ditto—ditto
20	66	59	29,85	29,63	W.—S. W.	Cloudy—shower
21	65	58	29,45	29,51	S. W.	Ditto—ditto
22	63	56	29,62	29,78	N.—N. E.	Ditto—rain and wind
23	60	55	29,83	29,87	N. E.	Ditto—ditto—rain 10-16 in.
24	68	55	29,89	29,96	N.—N. E.	Cloudy—fair
25	73	56	29,97	29,98	N.	Fair—clear

Hitchen, Herts. WATSON PERKS.

D.	H.	M.	
1	0	0	⊙ rises 4 h. 18′ 8″.
1	0	0	Clock before ⊙ 5′ 58″.
3	7	21	Ecliptic Conjunction or ● New Moon.
4	4	0	☽ in conj. with o in Leo.
4	13	0	☽ in conj. with π in Leo.
7	0	0	Clock before ⊙ 5′ 28″
8	11	0	☽ in conj. with α in Virgo.
8	11	0	☽ in conj. with ι in Virgo.
9	5	0	♀ in conj. with β in Virgo.
9	15	0	♃ in conj. with σ in Leo.
10	0	0	♅ Geocentric, long. 21°, 2 Cap. lat. 0°, 31′ S.
10	6	14	☽ in □, first quarter.
10	14	0	☽ in conj. with ♂ long. 21°, in Scorpio. ☽ lat. 38′ S. ♂ lat. 2° 8′ S. diff. lat. 1° 30′.
10	0	0	⊙ rises 4 h. 33′ 8.
10	20	0	☽ in conjunction with κ in Libra.
11	0	0	☽ in conj. with λ in Libra.
11	5	0	☽ in conj. with 1 β in Scorpio.
11	5	0	☽ in conj. with 2 β in Scorpio
12	11	0	☽ in conj. with ρ in Oph.
13	8	0	☽ in conj. with 1 μ in Sagett.
13	9	0	☽ in conj. with 2 μ in Sagett.
14	0	0	Clock before ⊙ 4 h. 27.
14	10	0	☽ in conj. with δ in Sagett.
15	13	0	☽ in conj. with β in Capri
16	0	0	☿ Stationary.
16	3	0	♀ in conj. with η in Virgo
17	0	0	⊙ rises 4 h. 46′ 8.
17	5	14	Ecliptic Opposition or ● full moon.
17	7	0	♄ in conj. with μ in Gemini.
21	0	0	Clock before ⊙ 2′ 58″
23	6	2	⊙ enters Virgo.
23	23	0	☾ in conj. with δ in Aries.
20	0	0	♅ Geocentric, long. 20° 44 Cap. lat. 0° 13′ S.
24	6	0	♂ in conj. with δ in Scorpio.
25	0	0	⊙ rises 5 h. 0′ 7″.
25	3	9	☾ in □ last quarter.
26	4	0	☾ in conj. with ι in Taurus
27	20	0	☾ in conj. with γ in Gemini.
28	0	0	Clock before ⊙ 1′ 7″.
30	16	0	☾ in conj. with 1 α in Cancer.
33	17	0	☾ in conj. with 2 α in Concer.
31	0	0	⊙ rises 5 h. 11′ 7″
31	19	0	♀ in conj with α in Virgo.
31	21	0	☾ in conj. with π in Leo.
31	6	0	♅ Geocentric, long. 20° 26 Cap. lat. 0° 31′ S.

The waxing ☽ moon—the waning moon ☾

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, June and July, 1826.

1826.	Thermo. Hig.	Thermo. Low.	Barometer. High.	Barometer. Low.	Rain in inches.	1826.	Thermo. Hig.	Thermo. Low.	Barometer. High.	Barometer. Low	Rain in inches.
JUNE.						JULY.					
26	86	56	30,19	30,16		11	76	49	29,90	29,86	
27	87	55	30,07	30,00		12	69	51	29,88	29,77	,025
28	88	58	30,09	30,00	,475	13	68	56,5	29,70	29,64	
29	81	56	30,16	30,10		14	74	47	29,79	29,70	,2
30	83	54	30,15	30,10	,025	15	75	52	29,86	29,83	
JULY.											
1	79	58	30,16	30,10		16	71	48	29,80	29,77	,025
2	80	51	30,18	30,17		17	76	46	29,90	station.	,05
3	84	51	30,20	30,16		18	77	47	29,88	station.	
4	85	50	30,10	30,00		19	70	51	29,88	29,84	
5	86	56	29,88	station.		20	71	49	29,94	29,77	
6	85	52	29,90	29,89		21	66	53	29,55	station.	
7	83	59	29,84	29,80		22	71	44	29,80	29,70	
8	79,5	56	29,70	29,69		23	59	51	29,94	29,86	1,65
9	78	59	29,72	29,70	,1	24	70	52	30,00	29,94	,3
10	76	49	29,80	29,77		25	74	49	30,07	30,03	

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. from Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

ARCTIC REGIONS.—A new expedition under the command of Captain Parry, has been resolved upon, and at the earnest solicitation of that gentleman; the object of which is to explore the northern hemisphere. The plan which is to be adopted, is that of having one large vessel to proceed to a given point, where it will be stationed, and serve as a rendezvous to parties sent out in boats or sledges, with dogs, &c. to pursue discoveries in every quarter on sea and shore. This expedition if undertaken, in conjunction with Captain Franklin, we hope will throw considerable light upon the geography of the Northern Regions.

Lodge's Portraits of Illustrious Persons, part XX, of which, has made its appearance, completes the fifth volume of this splendid and interesting publication. In this number will be found the following portraits :—Sir Thomas Moore from Holbein painted in 1535, now in the possession of Mr. Leuthall of Burford Priory; the Duke and Duchess of Marlborough (the latter from Lely): John Dudley Duke of Northumberland, also from Holbein; and John first Lord Maitland of Thirlestane, the ancestor of the family of Lauderdale, The biographical accounts as those in the preceeding parts, being carefully gathered from the best known authorities, the plates engraved by S. Freeman, R. Cooper, and T. A. Deane, possess the same degree of excellence which this work has already exhibited to the public.

A History of the Battle of Agincourt, from contemporary authorities, the greater part of which have been hitherto inedited, with Biographical Notices of the Commanders, &c. By Nicholas Harris Nicholas, is nearly ready for publication.

CAPTAIN FRANKLIN.—We learn from a letter to the Editor of the *Detroit Gazette*, written by a Gentleman at the Sault St. Marie, Dated 19th of April, that Captain Franklin reached the shores of the Arctic Sea, on the 14th of August, without encountering any of the Esquismaux in descending M'Kenzie's River; they have retired to their glacial habitation still nearer the magnetie pole. After remaining two days on the coast the party returned to Bearlake, where arrangements had been made for their winter residence by the Hudson's Bay Company.

Mr. Percival, the author of a History of Italy, has been for some time engaged in writing a History of France, which is designed to extend from the foundation of the French Monarchy, to the second restoration of the bourden dynasty.

A prospectus of an American Annual Register has been issued by Messrs. G. and C. Carvill of New York, which is to appear every August, in an octavo volume, containing about eight hundred pages. This will be the first Transatlantic attempt of this kind.

SCULPTURE.—A very fine bas-relief of the marriage of Thetis and Peleus has arrived at Paris from Rome; the French Artists as well as the journals of the capital, speak of it in terms of the highest commendation. The moment chosen, is that, in which the Goddess Discord throws the apple into the midst of the Banquet of the Gods.

Dr. Forbes, of Chichester, is preparing for publication a translalation of the improved edition of Lawrence's Treatise on Diseases of the Chest, with Notes and Commentaries by the Translator.

LONDON:
JOSEPH SHACKELL, PRINTER, KIRBY STREET, HATTON GARDEN.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. LXXI.

Recent Patents.

To Lemuel Welman Wright, *of Princes Street, Lambeth, in the County of Surrey, Engineer, for his Invention of a certain Improvement in the construction of Steam Engines.*

[Sealed 21st October, 1825.]

The improvement claimed under this patent applies to rotatory steam-engines, or steam-wheels, and particularly to that kind of engine described in the specification of a patent granted in 1817 to M. Poole, of Lincoln's Inn, gentleman, the agent of the present patentee, who at that time resided in America. Indeed, this invention is to be considered as an improvement upon the said patent, and consists in a new mode of constructing the joints of the leaves or valves, which act as pistons, by the adaptation of which improvement, the valves, as the wheel re-

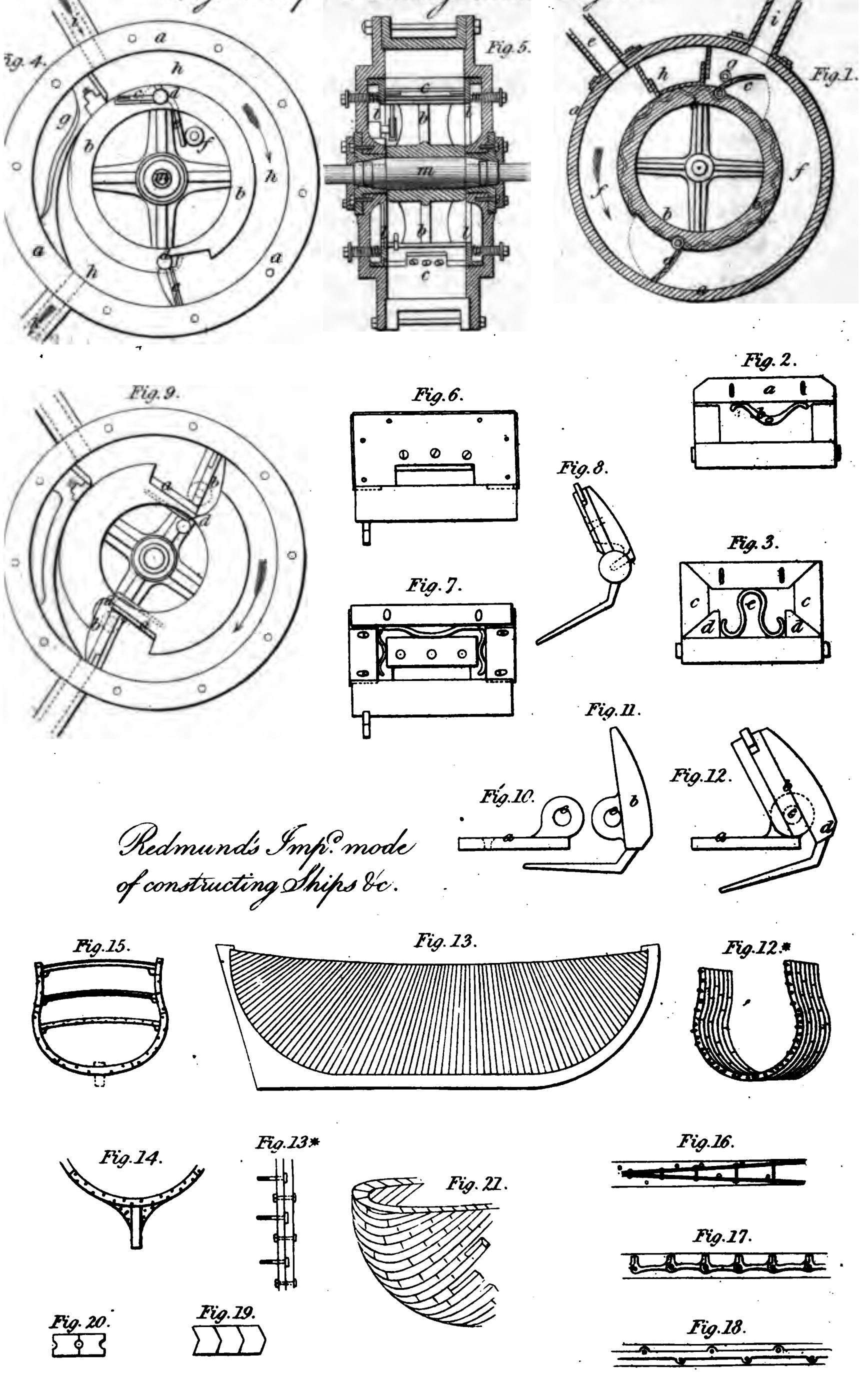
volves are rendered more perfectly steam tight than by any other contrivance hitherto known.

In order to understand this invention correctly, it will be desirable to explain the construction of the rotatory engine, described under the former patent, and above alluded to, which is shewn in Plate IV. at fig. 1, the side being removed for the purpose of exhibiting the interior; *a, a, a*, is a cylindrical box or drum, within which the wheel *b, b, b*, is intended to revolve; *c, c*, are valves or leaves, moving upon hinge joints connected to the wheel. Steam of considerable pressure being admitted from the pipe *e*, into the hollow space, *f, f*, its elastic force exerts itself against the radiant leaf or valve *c*, which drives it and the wheel round, as shewn by the arrow, until the back of the leaf coming against the roller *g*, the leaf is made to fall down into its recess in the wheel, and to pass under the stop *h*; the steam which impelled the leaf having escaped at the pipe *i*, the other valve or leaf, *c*, having been raised by its tail lever striking against a roller, is now brought into action, assuming the situation of the former, and the steam, exerting its elastic force, drives this forward also, and thus continues the rotatory motion of the wheel, from the axle of which, power is communicated to turn other machinery.

The particular features of novelty claimed under the patent of 1817, were, first, a mode of packing the edges of the wheel *b*, in its cylindrical box, *a*, so as to prevent the escape of steam; secondly, rounding or cutting off the corners of the leaves or valves, *c*, and making the angles of the circular space *f*, to correspond to the form of the leaves; thirdly, metallic packings, adapted to keep the edges of the leaves or valves steam tight, which are kept up against the surfaces of the interior of the box, by springs and wedges.

Wright's Imp^d. Rotatory Steam Engine.

Redmund's Imp^d. mode of constructing Ships &c.



W. Newton del^t 1^st Sept^r 1826. S. Bellin sculp

The first of these contrivances is seen in fig. 1, and consists of a zigzag or winding groove, formed round the edges of the wheel, into which folds of cloth or hemp is inserted, and this, pressing against the plates or sides of the box, prevents the escape of steam; the rising parts of the packing also are so contrived, that a portion of it is always in contact with the under side or curved part of the steam stop, *h*, and by that means, the escape of the steam in that direction is prevented. Fig. 2, represents the packing of one of the valves or leaves, the face plate being removed to shew the construction within. The corners of the packing are here cut off, and the inner part of the box must be formed to correspond. In this figure, also, is shewn a spring, *b*, pressing out the piece, *a*, which is enabled to slide by the pins that hold it, passing through long slots.

Fig. 3, is a valve or leaf, with square corners, the face plate being removed to shew the packing. In this, the contrivance is exhibited, by which the lateral portions of the packing are pressed outwards, and always kept up to the sides of the chamber in which they work. The pieces *c, c*, are formed with inclined planes on their edges, and wedge pieces, *d, d*, are made to act against them by the force of a spring, *e*. By these means, the packing at the edges of the valves, are driven up close to the surfaces of the box, against which they work, and the junctions are rendered perfectly steam tight.

The improvement which constitutes the subject of the present patent will be seen by reference to the following figures. Fig 4, exhibits the interior of the rotatory steam engine, according to the last improvement; fig. 5, a cross section of the same, the respective letters refering to corresponding parts in these two figures; *a, a, a*, is the outer cylindrical case in which the steam-wheel acts;

b, b, b, is the steam wheel; *c, c*, are the leaves or valves; *d, d*, are steel pins affixed to the leaves, which turn in cylindrical sockets, and constitute the joints, *e, e*, are the trip levers, extending from the back of the steel pins, *d*, which, by striking against the tappet, or friction roller, *f*, as the wheel *b*, goes round, causes the levers *c*, to be thrown up into a radiant position; *g*, is the steam stop; *h, h, h*, is the steam channel; *i*, is the induction pipe, and *k*, is the eduction pipe.

The steam being admitted from a boiler by the induction pipe *i*, passes into the steam-channel, *h*, where by its pressure, acting against the radiant leaf *c*, the wheel is driven round, and when the leaf has passed the eduction pipe *k*, the steam escapes through that pipe, and the leaf is shut down into the periphery of the wheel by the curved part of the steam stop; the opposite leaf having been thrown up into its radiant position by the tappit or friction roller *f*, as above described, against which the pressure of the steam now acts and so continues, the rotatory motion of the wheel upon its axis *m*, from whence the power is communicated to work other machines.

The mode by which the hinge joint of the leaf *a*, is proposed to be constructed, is by casting the metal of the steam-wheel *b*, at the parts were the joints are to be formed, in the shape shewn by dotted lines, and then boring a cylindrical hole through the solid part of the wheel, for the socket of each hinge. A cylindrical steel pin is then ground, so as to fit accurately into the hole, and this pin being afterwards attached to the leaf by screws, the superfluous parts of the metal may then be removed, leaving so much of the hole as will form a recess or socket, that shall embrace about three fourths of the circumference of the pin, *d*.

The leaf having been affixed to its axle or pin, as above

said, it is then to be slidden side-ways into the socket, and is secured from falling out by attaching the packing in front, and the trip leaver to the back part of it. The leaf, and its pin, are thus allowed to act in the socket-joint; a portion of the solid part of the wheel passing into a recess in the front of the leaf, as shewn in the detached fig. 6, and a projecting piece falling into a recess in the wheel, between the leaf, forms a shoulder to support it.

The particular form and construction of the leaf or valve at present employed, is shewn in the several detached views of it, fig. 6, 7, and 8; in which several views, the form, position, and action of the metallic packing, and the springs which press the pieces outward, are shewn.

The packing of the steam stop, *g*, is effected by the introduction of a piece of brass, having a spring in a recess behind it, for the purpose of keeping it close against the periphery of the wheel *b*, and an iron plate is affixed by screws, in front of the stop *g*, in order to prevent the steam from passing.

The packing for preventing the escape of the steam, between the sides of the wheel and side plates, *l*, *l*, is produced by metallic rings, placed flat against the sides of the wheel *b*, *b*, which are fitted accurately into the plates *l*, and are pressed up against the sides of the wheel by helical springs, the tension of which, may be increased by screwing up the studs that the springs coil round.

The spindle *m*, fig. 5, is fitted to the wheel *b*, in the ordinary way; its bearings are hardened steel collars, two at each end, and between them a recess is formed for the reception of oil or other anti-attritious matters, by the introduction of a smaller collar. The collars are made slightly conical, that the brass plummer boxes may be screwed up in order to tighten them, as the metal wears

away. On the outside of the plummer boxes and collars, there are stuffing boxes, kept tight by screws, to prevent any escape of steam, that might have insinuated itself behind the wheel.

Fig. 9, represents a steam-wheel, in which the joint of the leaf or valve is constructed in a different manner to the foregoing. The packing and the springs within the leaf are to be made in the same way as that described above. The mode of forming the joint of the leaf will be understood by referencé to the detached figures. The joint is formed by affixing the plate *a*, (fig. 10,) with its staple to the steám-wheel, as seen at fig. 9, and then attaching the leaf *b*, (fig. 11,) to the plate *a*, by means of a pin, passed through the two staples, *c*, *c*.

The particular advantage of this construction of leaf joint or hinge, is that the workmanship does not require the same accuracy of fitting, as the joint first described, for in this instance, a perfectly secure tight stop is produced by the front of the leaf at *d*, bedding against the edge of the hinge plate *a*, as will be seen by inspecting the steam-wheel, fig. 9, and the detached fig. 12.

The patentee concludes by saying, " In describing the construction of my improvements on steam-engines, I have found it necessary to explain certain parts of the engine, which are not new, and consequently, are not claimed by me, I therefore wish it to be understood, that my present improvements consist, 1st, in the peculiar method of forming and constructing the joints or hinges of the leaves, valves, or pistons ; 2nd, in the mode of packing the steam stop ; 3rd, the conical steel collars, which form the bearings, of the axle in the plummer boxes, as respectively described above, all of which, I claim as improvements, when applied to rotatory steam-engines.

[*Inrolled April*, 1826.]

To John George Bodmer, *of Oxford Street, Chorlton Row, in the Parish of Manchester, in the County of Lancaster, Civil Engineer, for his Invention and perfection of certain Improvements in the Machinery for Cleansing, Cording, Drawing, Roving and Spinning of Cotton and Wool.*

[Sealed 14th October, 1824.]

The improvements proposed under this Patent, have two principle features, viz. 1st, a more advantageous mode than has heretofore been practised, of preparing and supplying the rovings of cotton or wool, for the feeding of mules, throstles, and other spinning machines; and 2ndly, in certain contrivances for producing the requisite movements, for running backward and forward the carriage of a mule, and giving the variable velocities to the spindles in the different parts of the operation.

The Patentee has extended his specification to a most immoderate length, having filled *thirty four closely written skins of parchment*, with the details of his contrivances, which are of course much too elaborate for us to repeat. Our readers will, however, loose nothing material in our version of the subject, for this lengthened treatise consists principally in descriptions of well known machines, to which the improvements are proposed to be adapted.

In the first place, the invention is described as connected with a blowing or scutching machine, in which the rough cotton or wool is to be cleansed preparatory to spinning, that is, divested of its dust and other impurities. The material about to be operated upon (having been previously opened or separated by the means usually employed in the first process of preparation,) is passed by

an endless web to a pair of guide rollers, which conduct it forward through three pairs of drawing rollers, where the filiaments are extended, and the material drawn out about fifteen times, as in the ordinary drawing process. From thence the filiaments pass through the blowing or scutching apparatus, where they are scraped or beaten by a series of indented ledges standing in radiating position, upon the periphery of a rapidly revolving drum. By these means, any dirt which adhered to the cotton or wool, is beaten off: and at the same time, a very strong current of wind produced by fans, within the drum, acting upon the cotton or wool, blows the dust through a grating below, and thereby cleanses the material thus operated upon.

The force of the wind produced by the rotation of the drum, carries the light filiaments of cotton or wool, forward into a chamber, which from the wind passing up it, the patentee calls a chimney; this chimney is divided into several compartments, by vertical partitions, and hence the cotton is separated into as many distinct breadths of sliver, as there are compartments. The extreme ends of these breadths of sliver having been carried forward by the current of wind into the chimney, now fall upon traversing endless bands, and are by means of those bands conducted to another system of drawing rollers, where the filiaments are further drawn, and elongated from nine to twelve times.

At this point of the operation, the improvement first above-mentioned takes place, which consists in the employment of a series of guide rollers, placed at an oblique angle to the drawing rollers, by means of which, the course of the filiaments of cotton or wool, conducted from the drawing rollers through spouts, is made to deviate from its previous straight direction, and being from them carried

downwards on to another traversing web below, the lengths of filiament are made to proceed in a horizontal course, at right angles to that in which they had been drawn, and are ultimately coiled round or lapped with the cloth that brings them forward on to a cylindrical roller. The particular object of turning the directions of the filiaments is stated by the patentee to be this,—"If an inequality of thickness takes place in the sliver, by turning it at right angles the inequality becomes divided."

In a similar way, the slivers from a number of carding engines may be conducted off at right angles by means of endless bands, and be delivered to a lapping engine, for the purpose of coiling them upon a cloth, round a cylindrical roller; the carding engines being all connected together, and actuated simultaneously by straps or bevel gear.

The rollers when thus covered with the cloth, and the rovings of cotton or wool, are to be placed in convenient situations for feeding the drawing rollers and spindles of mules, throstles, or other spinning machines, instead of feeding the said machinery from copts or bobbins as usual; and for the better effecting of that object, the roller thus covered with cotton or wool, is to be placed upon two other revolving rollers, which will cause it to turn round by the friction of the surfaces, and by that means, uncoil and deliver the rovings as may be required.

The second feature of the invention, as we stated above consists in a method of moving the carriage of the mule backward and forward. The patentee preceeds this explanation of this contrivance by a description of the ordinary mode of working the mule, and then states, that instead of the usual band and wheel employed for driving the carriage, he connects the carriage to the standard or

frame, by means of a series of levers combined in the way of lazy-tongs: one end of the lazy-tongs being attached to the carriage, and the other to the standard.

At the end of the axle of the delivering rollers, that receive and guide the rovings, there are some bevel-wheels attached, which as they revolve, move a cam or fusee, and this cam acting against the legs of the lazy-tongs according to its position, opens or shuts them, and consequently, causes the carriage to advance or recede as the lazy-tongs elongate or collapse. Notwithstanding the extravagant length of the specification, this part of the invention is not described in the clearest possible way. The intention and action of such an apparatus, may however be easily understood, and as to the details of the other parts of the machinery, they appear to be all of them common to ordinary spinning apparatus, and therefore, need not be enlarged upon here.

[*Inrolled March*, 1825.]

To THOMAS WALLER, *of Luton, in the County of Bedford, Straw Hat Manufacturer, for his Invention of certain Improvements in the Manufacture of Straw Platt for the purpose of making Bonnets, Hats, and other articles.*

[Sealed 18th February, 1826.]

THESE improvements in the manufacture of straw platt, for making bonnets, hats, &c. consists in the employment of the ordinary wheat straw grown in Tuscany, and other parts of Italy, instead of English straw: which is platted,

twisted, or woven in the same manner as English straw, in order to produce similar kinds of straw fabric to those made of English straw, and commonly called or known by the names of whole Dunstable platt; double seven split straw platt; Luton twist platt; broad Luton twist platt; and double eleven split straw platt.

The mode of preparing the Tuscany or Italian straw, (which is not generally known here,) is by pulling the bearded wheat while the ear is in a soft milky state, the corn having been sown very close, and of consequence produced in a thin, short, and dwindled condition. The straw with its ears and roots, is spread out thinly upon the ground in fine hot weather, for three or four days, or more, in order to dry the sap; it is then tied up in bundles and stacked, for the purpose of enabling the heat of the mow to drive off any remaining moisture. It is important to keep the ends of the straws air tight, in order to retain the pith, and prevent its gummy particles from passing off by evaporation.

After the straw has been about a mouth in the mow, it is removed to a meadow and spread out, that the dew may act upon it, together with the sun and air, and promote the bleaching, it being necessary frequently to turn the straw while this process is going on. The first process of bleaching being complete, the lower joint and root is pulled from the straw, leaving the upper part fit for use, which is then sorted according to qualities, and after being submitted to the action of steam, for the purpose of extracting its colour, and then to a fumigation of sulphur to complete the bleaching, the straws are in a condition to be platted or woven into hats and bonnets, and are in that state imported into England in bundles, the dried ears of the wheat being still on the straw.

The modes of preparing the said straw in Italy, how-

ever, forms no part of this invention, it is to be employed in the same state of preparation as when used for weaving or platting that peculiar straw fabric called Leghorn, and the patentee twists or weaves the said Italian straw, whether whole or split, in the same manner as is commonly practised by the people in Bedfordshire and its neighbourhood, in making the above-mentioned whole Dunstable platt; double seven split straw platt; Luton twist platt; broad Luton twist platt, and double eleven split straw platt; the methods of making which, the patentee states, are so well understood by straw-platters, that any further explanation of the process is perfectly unnecessary.

The advantages of this invention are, that the Italian straw, from the mode in which it is prepared, is when so platted, much stronger than the English straw platt, and when sown together into the forms of hats, bonnets, and other articles, may be readily unsown without injury, and made up again into other forms, suitable to the prevailing fashion or fancy of the wearer; whereas the breadths of Leghorn platt, commonly made from the same materials, being nitted together at their edges, are not capable of being disunited and made up again into other forms.

The specification concludes by saying—" Having thus stated my improvements, I wish to observe, that I do not profess to be the inventor of any of the several kinds of platt above-mentioned, but I rest my claim of invention solely in the employment of Italian straw, for the platting twisting, or weaving of similar kinds of fabric to those heretofore made of English straw, whether whole or split, excepting the English imitations of Leghorn platt: none of the various platts proposed to be made under this patent, having that sort of selvage which is capable of being nitted together, but are all of them so to be platted

mineral substances above named, and which preparation may be also usefully employed in preventing decay in various other substances beside wood."

[*Inrolled August*, 1826.]

To Benjamin Newmarch, *of Cheltenham, in the County of Gloucester, Esq. for his Invention of an improved method of Exploding Fire Arms.*

[Sealed 16th January, 1826.]

This invention consists in introducing into the charge of gunpowder, contained in the barrel of a fowling-piece, or other description of fire arms when loaded, the fire or sensible heat produced by the sudden compression of air; which fire or sensible heat, is proposed to be obtained in a similar manner to that commonly practised in igniting the substance called German tinder, in the well known apparatus denominated an instantaneous light machine, constructed in a walking stick: that is, by means of a piston accurately fitted and worked in a cylinder, by the sudden stroke of which, the volume of air contained in the cylinder becomes so much compressed as to give out its caloric in the state of sensible heat or fire.

There may be various modes devised of bringing this principle into action, for the discharge of fire arms, all of which it would be impossible for the patentee to describe, he has therefore, merely exhibited one contrivance adapted to a fowling-piece, which he considers to be the most eligible method of igniting the charge of that kind of gun, upon the principle above stated, without

intending to confine himself to that particular construction of mechanism.

Plate V. fig 1, represents a section of part of the barrel and stock of a gun, with the apparatus to be employed for discharging it; *a*, is the barrel having what is termed a patent breech, *b*; this piece is to be loaded with gunpowder and shot in the usual way, and *c*, is the touch-hole in the centre, at the hind part of the breech; *d*, is an accurately formed hollow cylinder having a small air hole, *e*; *f*, is a piston ground to fit the cylinder perfectly air tight, and to move along it with as little friction as possible; *g*, is a rod affixed to the piston at one end, and to a powerful helical spring *h*, at the other end. A portion of this piston rod is formed into a rack *i*, and a toothed-segment *k*, is made to take into this rack, and is moved by a key or lever on the outside for the purpose of drawing back the piston and its rod, which drives the helical spring up to its tension. When the rod has been thus drawn back, the point of the sear *l*, is forced into a small notch in the rod by the sear-spring *m*, which prevents the piston from moving forward, and the piece may then be considered as cocked ready to be discharged.

On bringing the piece into a firing position, the trigger is pulled by the finger as usual, which by raising the long arm of the sear withdraws its point from the notch, and the piston rod being now released from its confinement, the power of the helical spring exerts itself, and projects the piston forward in its cylinder with such force as to compress the air contained in the cylinder before the piston, and cause it to give out its caloric in the state of sensible heat or fire, at the aperture in front of the cylinder, where the small ball valve *n*, is placed: and passing by this valve, the fire enters the barrel in the touch-hole in the breech, and instantly ignites the charge of gunpowder.

After the piece has been re-loaded, the key or lever of the toothed-segment, is to be turned round, so as to draw back the piston, and force the spring up to its tension as before, when the point of the sear again falling into the notch, confines the piston rod and leaves the piece in a state ready to be discharged.

The patentee says—"This is the contrivance which I consider to be most eligible for discharging fowling-pieces, upon my improved principle, and any variations or modifications of this mode which might be found more desirable for discharging other descriptions of fire arms, would readily suggest themselves to a competent mechanic, I therefore consider it unnecessary to explain other contrivances, as I claim the exclusive right, as being the first inventor of discharging fire arms by the sensible heat or fire, obtained in the sudden compression or condensation of air."

[*Inrolled, July*, 1826.]

To Ross Corbett, *of Glasgow, in Scotland, Merchant, for his Invention of a new Step or Steps to ascend and descend from Coaches and other Carriages.*

[Sealed 21st June, 1825.]

The design of this invention is to make the steps of a coach or other carriage fold up of themselves, by the act of shutting the door of the vehicle: to effect which object, the inventor has placed the pivots upon which the one, two, or more steps, turn, in a pair of fixed side rails, extending out from the under side of the coach body, at

a small inclination from the perpendicular. From the back part of each step an arm or lever extends, which arm is connected to a sliding bar, and to the upper end of this bar a bent lever is attached, which is acted upon by a rod connected to the coach door. By this contrivance, the opening of the coach door turns the bent lever upon its fulscrum, and causes the bar to slide up, which throws the steps out into horizontal positions; the closing of the door moves the bent lever and sliding bar the contrary way, and causes the steps to be folded up.

Plate V. fig. 2, exhibits a side view of the coach, with the apparatus attached, the steps being thrown out on the right side, and folded up on the other. Fig. 3, is an enlarged representation of the steps and their appendages, and fig. 4, is a horizontal view of the same; *a*, represents a portion of the framing and floor of the carriage shewn in section; *b*, one of the fixed side-rails, in which the pivots of the steps, *c*, *c*, turn; *d*, *d*, are the arms extending from the back part of the steps; *e*, is the sliding bar; *f*, is the bent lever, turning upon a fulcrum at *g*, which bent lever is attached to the sliding bar by a joint at top. The reverse end of the bent lever *f*, is connected to a horizontal lever, *h*, (see fig. 4); and this is also attached by a joint, to what may be called a sweep rod, *i*, which is connected to the door *k*.

It will now be seen, that, on opening the door *k*, the rod, *i*, and the longer arm of the horizontal lever, *h*, will be drawn forward, as at fig. 4, in doing which, the shorter arm of the horizontal lever, *h*, will draw back the bent lever, *f*, and that sliding the bar *e*, upwards, causes the steps *c*, *c*, to be thrown out into horizontal positions, as shown at fig. 3, and which is also seen on the right hand side of the coach, fig. 2, the door being there represented open. In closing the door, the sweep rod *i*, pushes the horizontal

lever *h*, back, as shewn by dots, and the bent lever *f*, being by that means thrown forward, the bar *e*, slides downward, and folds the steps up within the side rails, *b*, as shewn on the left side of the coach, fig. 2.

[*Inrolled December*, 1825.]

To William Moult, *of Lambeth, in the County of Surrey, Engineer, for his Improvement in the working of Water Wheels.*

[Sealed 9th December, 1824.]

The patentee proposes to immerse his wheel entirely under water, and to cause it to revolve in consequence of rendering one side specifically lighter than the other, which is done by throwing a current of air under the buckets at the lower part of the wheel, for the purpose of displacing the water from those buckets and occupying them with air.

The wheel is then turned by the buoyancy or upward pressure of the air in the buckets on the rising side, and the force obtained by these means is to be communicated from the axle, as the moving power for actuating any other machinery.

One mode of adapting this invention is shewn in Plate V. at fig. 5; *a*, is the bucket-wheel immersed in a vat or cistern of water; *b*, is an inverted air vessel also immersed in water, in a similar way to a gasometer; from the top of this vessel a bent pipe *c*, leads to the under side of the water-wheel, and the air forced through the pipe from the vessel *b*, (whether by a blowing machine or by

any other suitable means,) rising in the vat under the wheel, expels the water from the buckets in succession, and the air occupying the same place in the buckets, causes that side of the wheel to rise by its buoyancy or levity. This is the ostensible matter of invention.

The specification further describes a sort of steam-engine, which is recommended to be employed in conjunction with the air vessel, for the purpose of supplying the wind pipe, by pumping successive volumes of air into the gasometer, which is to pass from thence through the pipe to the lower part of the periphery of the water-wheel.

Two cylinders as *d*, and *e*, are to be placed in convenient situations above or contiguous to the air vessel, from the lower parts of which the pipes *f*, and *g*, lead to the air vessel; *h*, is a cock at the junctions of the pipes *i*, *j*, one of which, conducts cold water, the other steam. This part of the apparatus may however, be varied in several ways, and is only here exhibited to explain the intention of the patentee. The cock *h*, may be worked by a reciprocating apparatus, in a similar way to the induction and eduction valves of a steam-engine, its actuating power being communicated by the rotation of the water wheel.

Supposing that by the turning of the cock *h*, a jet of steam from a boiler situate at any convenient distance, be passed through the pipe *j*, into the cylinder *e*, the air in that cylinder will be blown out through the pipe *g*, into the gasometer *b*; and on turning the cock the reverse way, a jet of water will pass from the pipe *i*, into the cylinder *e*, and condense the steam therein, at which time a valve *k*, opening upwards will admit a fresh supply of air into the cylinder *e*, ready for the next discharge. The jet of steam being now turned into the cylinder *d*, the air will be expelled from thence through the pipe *f*, to the

gasometer, and the next turn of the cock will introduce a jet of cold water, for the purpose of condensing the steam in the cylinder *d*, when a valve *l*, opening upwards, will restore the partial vacuum in the cylinder.

In this way the gasometer or vessel *b*, is proposed to be constantly supplied with air, which discharging itself through the pipe *c*, to the under side of the immersed wheel, will cause it to revolve in the manner above described.

[*Inrolled June*, 1825.]

To JOHN OSBALDESTON, *of Shire Brow, within Blackburn, in the County Palatine af Lancaster, Calico Weaver, for his Improved method of making Healds, to be used iu the Weaving of Cotton, Silk, Woollen, and other Cloths.*

[Sealed 29th November, 1824.]

HEALDS are those appendages of a loom, through which the horizontally extended warp threads are passed, for the purpose of being alternately raised and depressed, in order to give space for driving the shuttle between the interventions of the upper and lower sheds of the warp in the act of weaving. The healds are sometimes called headles, leashes, and harness, and consist, of an upper and lower lath or rail of wood, with a series of small cords, extending in perpendicular directions, in each of which cords, a small loop is made for the purpose of receiving one of the warp threads, which the movements of the heald is to guide or conduct when the loom is in opera-

tion. The healds are so well known as parts of weaving apparatus, that almost every representation of a loom exhibits them, (see Stansfield's patent, Wilson's patent, and Tatlow's patent, Vol. XI. page 114, 129, and 254).

Healds have been, as above said, heretofore made of cords, but the object of the present patentee is to construct them of thin plates, or slips of metal, and to attach these slips together by means of rods. Plate V. fig. 6, represents the front of one of these improved healds; *a, a*, are the top and bottom rails, made of any light wood; *b, b*, are metal grooves, formed as shewn in the section, fig. 7; *c, c*, are pieces of metal, intended to slide in the grooves; they have each a hole perforated through them, for the purpose of receiving the rods, *d, d*. The slips *e*, are made very thin, edgewise, as seen in the front view, but have sufficient breadth to give them stability, and are perforated with a small hole about the middle, where the slip is bent, and the hole made obliquely, in order that the warp thread may pass through it without being drawn out of a straight line.

In putting these metallic healds together, a number of the slips *e*, are to be connected, by passing the rods, *d, d*, through holes at top and bottom of the slips; then one of the sliding pieces is to be inserted into each of the grooves, and the rods passed through them, after which another series of the slips *e*, may be strung on to the rods, and so on, until the entire breadth of the heald is made up by a succession of slips, the whole may then be made fast by a screw nut at the ends of the rod, *d*, when the heald is in a state fit for use.

These improved healds are to be made of any material that may be found suitable, but the patentee prefers to make them with wooden rails *a, a*, at top and bottom, and the slips *e, e*, of thin plate brass: the object being to

construct healds upon a more durable plan than those usually made of cords.

[*Inrolled May*, 1825.]

To David Redmund, *of Agnus Circus, Old Street Road, in the County of Middlesex, Engineer, for his Invention of certain Improvements in Building or constructing Ships, Houses, and other Buildings.*

[Sealed 28th June, 1825.

The object of the patentee in his improved mode of constructing ships, is to form their hulls in such a way that they may present an arch in every direction, in which the vessel might receive an external shock. This has been partially affected in the vessels constructed with round sterns, upon the plan of Sir Robert Seppings, but the present method of combining the timbers in building the hulls of vessels, though affording the appearance of great strength when upon the round stern principle, is in reality very defective, and renders that plan of no comparative utility, as an arch to resist shocks or violent concussions, should have all its parts firmly connected together, and its abutments made perfectly secure.

In the ordinary mode of framing the hulls of vessels, vacancies are left between the ribs, and the framing, the several parts not being connected in a stable manner, until the planking is affixed; so that in fact, previous to planking, the hull has no strength whatever. This being the foundation of the structure, any external violence acting upon the hull, will be received in some direction by

the wooden tree-nails or bolts, which have first given strength to the whole, by uniting the framing and planking together, and these becoming loose in their holes, will soon render the vessel crazy and leaky, which shews clearly how very inadequate such a mode of building must be, to sustain any lengthened continuance of such strains and concussions as all vessels are liable to.

The present invention, is therefore, a method of constructing vessels without vacancies between their timbers or ribs, in which the patentee proposes to commence building in the middle of the hull, and to bolt each rib or frame firmly to its fellow, inserting the bolts in one rib which are to hold and confine the next, and so on through the whole structure, so as to make the ribs mutually support each other, as shewn in Plate IV. at fig. 12, where six ribs are seen combined, forming the middle part of the hull of a vessel, and in which the bolts are seen standing forward, ready to be passed through the next rib, which is to be attached and confined by nuts, screwed on to the ends of the bolts, as in securing the former ribs, observing that another set of bolts are to be inserted into this rib, previously to attaching it. In this way the hull of the vessel is to be constructed, working towards the head and stern, until the whole is formed, as in fig. 13.

The patentee says, that his heading joints are each grooved a little way in; and a tongue or tenon of metal driven in after it is in its place, which will serve as a stop to the caulking, and give steadiness to the ends; and the tongue or tenon should enter about an inch or more into the ribs on each side. It will be requisite to have as large washers or plates under the heads of the bolts, and also under the nuts, as the size of the timbers will admit of, only the edge of the plates should not come within $\frac{3}{4}$

strength. It must be understood, I merely mention the number and strength of bolts that should be put in to make a firm and substantial vessel, with timbers the same size as at present, even before it is planked; but it is obvious that ship-builders will exercise their own discretion on that head, more or less, according to circumstances: so that some vessels will be so incredibly strong, that a storm, or being driven on shore, would have no effect on them, being equally safe and secure on land or water: others would not perhaps build them so strong, but it is certain, that with the same quantity of timber, and a sufficiency of bolts, agreeable to the scale aforesaid, vessels may be constructed on this principle of such strength and stability, that to hear of the wreck of one of them would be quite a novelty. With timbers and bolts proportionate, there need be no limits to the dimensions or strength of vessels constructed on this plan, which is what is most wanting in steam navigation, the desideratum being a larger and much stronger vessel.

It will be seen that very strong vessels may be constructed on my principles, with the timbers running horizontally or longitudinally from head to stern, and connected together as before described. But I have described them vertically, as used at present, which I think to be the best, strongest, and simplest method of carrying my improvements into effect; as it is so trifling a variation from the present mode, being simply improvements on the present methods of arranging and connecting their timbers, which if strictly adhered to and generally adopted, will put an effectual stop to the appalling annual loss of lives, treasure, and time, to which we have been so long subjected; substituting safety, certainty, and punctuality, in all the future Naval and Mercantile affairs of this wonderful and enterprising nation,

thus keeping our own proper natural position in the new aera of enterprise opening to our view, in the general adoption of steam navigation, for all naval and commercial purposes.

The same mode of combining timbers, as that above described, is proposed for the erection of houses in situations which are greatly exposed to hurricanes and tempests, as in the West Indian Islands, and other parts abroad, where wood is plentiful; the bolts being in all cases passed through two pieces of wood, and the whole firmly combined, affords the greatest stability that could be obtained by any mode of uniting timbers together.

[*Inrolled December* 1825.]

To DAVID GORDON, *of Basinghall-street, in the City of London,* ESQ. *and* WILLIAM BOWSER, *of Parson's-street, Wellclose-square, in the County of Middlesex, Iron Manufacturers, for their Invention of certain Improvements in Plating or Coating Iron with Copper, or any other Composition, whereof Copper is the principal Ingredient.*

[Sealed 26th February, 1825.]

THIS invention is described, as arising out of a discovery made by the patentees, that polished iron, at or near the welding heat, *has a great disposition to unite chemical with melted copper.* This is indeed a discovery, but as some chemist may have the presumption to doubt the fact, it would have been as well to have suppressed

the theory, and have given the process only by which the plating is to be performed. We throw this out as a hint to patentees in general, for if the principles of an hypothesis are in error, the superstructure will be very easily overturned, and such has been the case in submitting the pretensions of erroneous specifications to legal investigation. We presume, however, with great submission to the patentees, that they have found out that when iron and copper is heated to certain temperatures, and brought into close contact, the particles of the two metals, are more susceptible of being mutually affected by the abstraction of cohesion, than under any other circumstances: and taking advantage of this knowledge, propose, under those very circumstances, to perform the plating process.

The surfaces of the iron plates, bars, rods, or whatever other articles are to be plated with copper, are to be first cleaned, that is, every thing like oxydation is to be removed; they are then introduced into a furnace, and heated to a white or welding heat. In that state, the iron articles are to be immersed in melted copper, or the melted copper may be poured upon the surface of the iron; observing, that the process must be conducted under such circumstances, that the atmospheric air be not suffered to come in contact with the iron, for if it does, oxydation will take place, and the adhesion of the two metals be prevented.

It is stated, that when the plating process is properly conducted, the adhesion will be so perfect, that the plates, bars, rods, or other articles, may be hammered, rolled, drawn, and otherwise operated upon, that is, beat into whatever forms may be desired, without disturbing the coating.

The process is proposed to be conducted in an air or

reverberating furnace, or under some circumstances in two furnaces connected together. In one of these the iron is to be heated, and in the other the copper melted. When the proper temperature of the iron is obtained, it is to be removed by rods, hooks, tongs, or such like contrivance, from one furnace, and immersed in the melted copper of the other furnace. As, however, oxygenated air must be carefully excluded from the furnaces during the operation, an arrangement of doors and compartments in the furnaces are proposed, but no plan of the contrivance is shewn, and we do not sufficiently understand the intended construction to explain it clearly. The peculiarities of the furnace, however, are not claimed as forming any part of the patent; indeed, several kinds of furnaces are spoken of as capable of performing the desired operation: and it is even proposed to put cold copper into an iron tray, and to allow it to coat the tray as it melts in the furnace.

The time proper for the iron to remain immersed in the melted copper, will depend upon the desired thickness of the coating; from one to fifteen minutes is mentioned, and the iron articles are to be held down in the melted copper by means of rods, bars, or other contrivances. In order to prevent the iron becoming oxydated, upon its surface, as soon as it has been cleaned it is to be coated with melted rosin or some such material as will evaporate from its surface when in the fire, long before the iron reaches the temperature at which the plating is to take place, and the furnace having no air within it but what has become de-oxygenated, the surfacc of the iron cannot become effected or coated with an oxydation.

It is to be observed, that this improved mode of plating is not confined to copper upon iron, but is extended to other compositions, in which copper forms a principle

ingredient, therefore, the plating of brass upon iron by the same means, is contemplated under the patent.

[*Inrolled August*, 1825.]

Two patents have been obtained by Mr John Poole, of Sheffield, one in 1816, the other in 1822, for plating brass upon iron, (see vol. III, page 237, of this journal,) and with the exception of washing the iron with a solution of borax, which forms a part of his process, there appears to be a great similarlity between the inventions there described, and the above; indeed, the shades of difference between the two in some parts of the process are so trifling, that we should have no hesitation in calling them the same.— EDITOR.

To GEORGE AUGUSTUS LAMB, *of Rye, in the County of Sussex, Doctor of Divinity, for his Invention of a new Composition of Malt and Hops.*

[Sealed 10th February, 1825.]

THE patentee proposes to make an extract from malt and hops, which shall contain not only the saccharine and bitter parts of the ingredients, but also the essential oil of the hops, and retain the flavour so as to be capable by the addition of water and yeast, of being fermented into beer.

The mode of making this extract, is by infusing the hops in warm water, in the proportion of one pound of hops to two gallons of water, and then submitting this infusion to the process of distillation, so as to obtain the essential oil of the hops, which will be produced in the proportion of about three ounces of the essential oil from

fifty pounds of good hops. After this has been done, the remaining liquor is to be strained off from the hops by pressure, and the extract thus obtained evaporated, until fifty pounds weight is reduced to fifteen, and when perfectly cold, three ounces of the essential oil of the hops is to be mixed with fifteen pounds of the evaporated extract.

The malt is to be submitted to infusion in the usual way, and the extract obtained, evaporated, until the produce of one bushel of good malt, shall be reduced to twenty-three pounds. When cold, the two extracts prepared as above described, are to be mixed together, in an earthen or wooden vessel, in the proportion of one thousand, one hundred and fifty pounds weight, of the evaporated extract of malt, to fifteen pounds of the compound extract of hops; or if intended to be sent to sea twenty-two pounds of the extract of hops are to be mixed with the above-mentioned quantity of the malt extract.

This mixture may be kept in stone jars or bottles, carefully excluded from the air, and may be fermented into beer as occasion shall require, by the addition of small quantities of yeast. For small beer one pound of the mixed extract should be incorporated with one gallon of water; for table ale, one pound and a half must be employed, and for strong ale, two pounds of the extract to the same quantity of water. In summer time, water at the natural temperature may be used, but when the weather is cold, the water should not be below 72° Fah.

[*Inrolled August*, 1825.]

To John Heathcoat, *of Tiverton, in the County of Devon, Lace Manufacturer, for his Invention of an Improved Method of producing Figures, or Ornaments, in or upon, a certain description, or kinds of Goods manufactured from Silk, Cotton, Flax, or other Yarn.*

[Sealed 25th February, 1825.]

This invention is a mode of producing upon the face of bobbin-net lace, any embroidered devise, in imitation of needle-work, which the patentee proposes to do, by sewing on to the net lace, a manufactured material called purl.

The net having been woven in the same way as bobbin-net lace is usually made, is to be stretched upon a frame, and the device intended to be embroidered, is to be drawn by a pencil or other means, upon the lace, and then the purl sewed on in the form of the pattern so drawn; which will produce that kind of embroidered lace called Brussells sprigs.

The device or pattern may be drawn upon a cushion, and the lace laid out upon it, previously to sewing on the purl, or it may be formed upon paper, and that being laid upon a cushion, the lace may be spread out, and the embroidery produced agreeably to the device, by sewing on the purl as above described, which being done, the lace is ready for sale or for use.

[*Inrolled August* 1825.]

To Joseph Apsden, *of Leeds, in the County of York, Bricklayer, for his new Invented Method of making Lime.*

[Sealed 6th June, 1825.]

The patentee proposes to scrape up the puddle or drift from those roads which have been made, or repaired with lime-stone, and after having dried it by exposure to the air, by a fire, or by steam-pipes, he places it in a kiln heated with coal, coke, or wood, and allows it to remain there till the carbonic acid is expelled. The material is by those means converted into lime, and is then in a fit state for building, or for manuring land. When mixed up into mortar for building, sand is to be added, but for spreading over land that is not necessary.

[*Inrolled August*, 1825.]

Polytechnic and Scientific Intelligence.

ROYAL SOCIETY.

[Continued from page 42.]

Feb. 23.—At this meeting of the Society a paper was read giving an account of a new reflecting curve, and its applicability to the construction of a telescope having only one reflector, by A. Robertson, D.D. F.R.S. S.P.A: Oxford. Also a paper on the construction of the Atmosphere, by J. Dalton, Esq. F.R.S. After some preliminary remarks, the author observes, that whatever may be

thought of Newton's hypothesis as to elastic fluids, as far as the *mechanical* effects of such fluids are objects of inquiry, we may safely adopt it; namely, that *each fluid is constituted of particles repelling one another by forces inversely as their central distances*, at least within ordinary limits of condensation and rarefaction.

After adverting to the fact that mixtures of various elastic fluids, such as is the atmosphere, composed of atoms of different volumes and elasticities, do not withstanding observe the same laws of condensation and rarefaction as simple elastic fluids, and to the difficulties which this fact throws in the way of the Newtonian hypothesis, Mr. D. puts a case which he thinks has not before been considered, and which may assist us materially in forming a correct notion of such mixed atmospheres.

Two equal cylindrical pipes are conceived to be placed perpendicularly to the horizon, in contact, and of indefinite length, close at the bottom, and open at the top. These are supposed to be filled with two gases of different kinds, the one with carbonic acid, and the other with hydrogen, in order to show the contrast more strikingly. The columns of gases are assumed each to be of the weight of 30 inches of mercury, and consequently will represent vertical columns of atmospheres of the respective gases equal in weight to like columns of the earth's atmosphere. Mr. D. calculates from known principles that the column of carbonic acid gas will terminate at 30 or 40 miles of elevation, or at least will become of such tenuity as that it may be disregarded. In like manner that of hydrogen will be found to become insignificant above 1200 miles of altitude. The author then supposes that horizontal air-tight partitions are made across both tubes at any given intervals of distance, and that openings are made, so that the gases in the corres-

sponding horizontal cells may communicate with each other, in which case each gas, as is well known, would divide itself equally between the two cells. For 30 or 40 miles both gases would be found in each cell; but for the rest of the column, namely, for 1000 miles or upwards, there would be nothing but hydrogen in both cells.

In the next place, Mr. D. conceives the horizontal partitions to be withdrawn, and considers what change would ensue. There would have been many cells about the summit of the carbonic acid atmosphere which, when opened for the purpose of communication, would part with half their contents to the collateral cells, but *half* the contents would not be able to fill the *whole space* of the cell, by reason that the gas was at its minimum density before. Hence the gas would be confined to the lower half of the cells, and there would be no carbonic acid in the upper parts. Of course when the partitions were removed, the carbonic acid in each cell would descend till it came in contact, with the like gas of the inferior cell. Thus there would be a slight descent of the upper regions of carbonic acid gas. The same also would happen to the hydrogen gas about the summit of its atmosphere, and a still more considerable descent would take place. Mr. D. seems to think there would be no material change in the mixed atmospheres afterwards. Thus the two mixed atmospheres would exhibit equal *volumes* of each gas in the lowest cells, or at the surface of the earth, though in the whole compound atmosphere the two gases are of equal *weights*.

All this would take place according to the author's arguments were the mixed atmospheres *quiescent*; but if the atmospheres are like the earth's atmosphere, in a constant state of commotion, greater or less, still there will be a constant tendency towards that state of equili-

brium which is above described. In the conclusion Mr. D. states, that he has a series of observations which support the opinion that the atmosphere at different seasons and elevations exhibits different proportions of its elements in association, which he intends to bring forward on some future occasion.

March 2.—The Hon. and Rev. Richard Carlton, and Lieut. Gen. Sir Rufan Shaw Donkin, were admitted Fellows of the Society.

Two papers, by Sir E. Home, Bart. V.P.R.S. were read, on the Coagulation of Blood in an Aneurismal Sac. and also of Blood taken from the Arm, by heated Iron. In the first paper, the author describes the symptoms of the disease in the patient on whom the experiment was tried, during and subsequently to its performance, which was effected by means of a heated acupunctorial needle; together with the state and characters of the blood so coagulated. To the second paper, in which the effects on the blood of heated bodies, at various temperatures are described, is annexed an account by Mr. Brande, of the chemical changes they produce in it.

March 9.—A paper was read, on the Analysis of Oil in Wine, with Remarks on the Salts called Sulphovinates; by Mr. H. Hennell, of Apothecaries' Hall: communicated by W. T. Brande, Esq. Sec. R.S. The following is an abstract of this paper.

Mr. Hennell at first supposing that the elements of oil of wine were the same as those of sulphuric ether, endeavoured accordingly to determine their relative proportions in the former substance, by passing its vapour over ignited peroxide of copper. In this process, portions of sulphurious acid gas and sulphate of copper were invariably obtained; in attempting to ascertain the origin of which, the oil of wine was heated in solution of muriate of

barytes, but no precipitate or even cloudiness was produced in it, though litmus paper at the same time indicated the presence of free acid. On concentrating the solution, however, a precipitate of sulphate of barytes was gradually formed; shewing that either the sulphuric acid was in some state of combination interfering with its action upon tests, or that its elements existed in the oil of wine in some unusual state of arrangement. From 200 grains of pure oil of wine, treated with solution of potash, evaporated to dryness, and ignited, and then treated successively with nitric acid and muriate of barytes, were obtained 218.3 of sulphrate of barytes, indicating 74 of sulphuric acid.

On resuming the analysis with peroxide of copper, with due care, and the additional precautions suggested by the nature of the substance as just pointed out, it appeared that 100 grains of oil of wine contain 53.70 of carbon, and 8.30 of hydrogen: the deficiency=38 parts being referable to the sulphuric acid, as shewn by the experiments above-mentioned. These proportions indicate the hydrocarbon combined with the sulphuric acid to contain an atom of each constituent; but they do not shew the quantity of hydrocarbon combined with the sulphuric acid, for oil of wine always holds in solution an excess of this hydrocarbon, from which it is impossible to free it. In order to determine, therefore the quantity of hydrocarbon in combination with the sulphuric acid, some oil of wine was heated with water, and precipitated carbonate of barytes was then added to it, which was dissolved, with effervescence. When, however, the solution was evaporated, it soon became acid, and sulphate of barytes precipitated. On treating a further quantity of oil of wine in the same manner, but precipitating the barytic solution by carbonate of potash, and evaporating at a temperature of 150° Fahr. it yielded tabular crystals, not unlike chlo-

The mean value of the inclination of the ring to the ecliptic, is 28° 5'·9, with a probable error not exceeding 6'·9.

M. Struve has detected no trace of a division of the ring into many parts; but he observes that the outer ring is much less brilliant than the inner. The five longest-known satellites are readily distinguished, through Fraunhofer's telescope, even in the illuminated field. The 4th appears like a small disc, diameter 0"·75. M. Struve saw the 6th several times; but he has never seen the 7th, of whose existence, indeed, Schöreter entertains doubts.

(To be continued.)

American Patents.

1826.

For Improvements in refrigerators for Distilleries, January 6, L. Chs. & Phil. Bodmann, Baltimore.

The machine for thrashing grain, Jan. 10, William Small, Augusta, Maine.

The joints for bedsteads, Jan. 11, John Mitchel, Harrisburg, Penn.

The washing machine, Jan. 11, Oliver Deane, Walpole, Mass.

The water cement, Jan. 11, Simeon Guilford, Lebanon, Pen.

The retarding carriages when descending hills, Jan. 16, Ezra Slifer, Boonsborough, Maryland.

The machine for thrashing grain, Jan. 16, Jacob A. Heermance, Redhook, N. York.

The horizontal cotton and wool spinner, Jan. 16, J. S. & B. J. Billings, Moreau, N. York.

The extending motion, and multiplying power, Jan. 16, William Kendall, Jun. Waterville, Maine.

The machinery for sawing boards, Jan. 16, William Kendall, Jun. Waterville, Maine.

The stove, &c. for cooking, Jan. 19, John Bonis, Baltimore.

The machine for mashing, in distilleries, Jan. 19, William Whitney, Rochester, N. York.

The tincture for curing corns, Jan. 20, Elisha Smith, N. Brunswick, New Jersey.

The mode of bushing sheaves and blocks, Jan. 23, Theodore and Daniel Curtis, Washington D. C.

The machine for mixing mortar, Jan. 23, John M. Brookings, Wiscasset, Maine.

The washing machine, Jan. 25, Willard Foster Oswiego, N. York.

The machine for sawing shingles, Jan. 25, Willard Foster, Oswiego, N. Y.

Making ornamenting rolls, Jan. 25, David H. Mason, Philadelphia.

The mode of drawing water, Jan. 27, Jeremiah Dexter, Salisbury, Conn.

The mode of obtaining water from wells, Jan. 27, Junius Smith, London, England.

The plough, Jan. 28, Stephen M'Cormick, Fauquier, Virginia.

The temples used in weaving cloth, Jan. 30, Orsemus M. Stillman, Brookfield, Maddison county, N. Y.

The cooking stove, February 1, David Little, Hagerstown, Md.

Cleaning the seed from Cotton, Feb. 3, Jesse Reed, Marsfield, Mass.

Pumps, Feb. 4, Silvanus Russell, Olean, N. York.

Constructing railways for raising vessels, Feb. 8, Amasa Miller, New-London, Conn.

The saw mill, Feb. 8, Israel Johnson, Jr. Villenovia, N. York.

Digging canals, Feb. 10, Jeremiah Brainerd, Rome, N. York.

The machine for pressing hay, Feb. 15, Nathan Whitney, Augusta, Maine.

The machine for planting cotton, &c. Feb. 15, Frs. H. Smith, Richmond, Virginia.

The steam pump, Feb. 16, George W. Long, U. S. Artillery, Old Point Comfort.

Making brooms, Feb. 15, Adam Sclater, Oxford Township, Penn.

The machine for pressing hops, Feb. 17, Joseph Wilson, Ostego, N. York.

The machine for thrashing grain, Feb. 18, Joseph Potter, Reading, Penn.

The machine for thrashing grain, Feb. 21, Daniel Hulbert, N. Etheridge, and J. M'Combs, Herkimer county, N. York.

Being a tube picker used in weaving, Feb. 21, Benjamin Holbrook, Providence, R. I.

Bedsteads, Feb. 21, Peter Breasted, Green country, N. York.

Called the "family mill," Feb. 23, David Flagg, Jr. Gardiner, Maine.

be affixed to the stiles of windows, or in similar situations to the edges of a door, gate, shutter, or blind, designed to slide vertically. These rollers are intended to be pressed by their spring carriages with considerable force against the sides or beads of the window-frame, for the purpose of creating so much friction as will keep the sash, when raised, suspended in its grooves by the lateral pressure, and prevent it from sliding until raised or lowered by hand. The bolts are adapted to the plates at top of the lower sash, for the purpose of shooting into the meeting bar of the upper sash, in order to hold the two together, and thereby secure the window.

This invention is susceptible of various modifications, some of which are exhibited in the several figures in plate VI; but the first and most simple plan of applying it, is shewn at fig 1, which is a front view of part of a pair of sashes, fitted to a window-frame, with the suspending and securing apparatus attached, the wood work being cut away for the purpose of shewing the improvements more distinctly. Fig. 2, is another view of part of a sash-window, with two plates and spring rollers, adapted for the suspension only; and fig. 3, is a section of a pair of sashes, with the securing apparatus attached to the meeting bars, distinct from the spring rollers.

The contrivances, however, for suspending and securing the windows, whether combined or detached, will be best understood by reference to the enlarged figures, where the parts are shewn more distinctly, and in different positions.

The suspending apparatus, consisting of the plate, spring, and roller, is exhibited in figs. 4, 5, and 6. Fig. 4, is an edge view, fig. 5, a back view, and fig. 6, a front view, or that side which slides against the frame of the window. The backs of four of these plates *a*, *a*, being

Making bolts to locks for doors, &c. March 24, J. Brown, and G. W. Robinson, Providence, R. I.

The steering wheel for vessels, March 24, John M. Brown, Boston.

Called a sight-gauge for a steam boiler, March 24, Wm. Barker, Kingston, Luzerne county, Penn.

The machine for dividing timber March 25, do. do.

The machinery of the pendulum and lever power, March 25, Atrice and Cyrus Berry, Pleasant Valley, N. York.

The mode of applying steam, wind and water, as a joint power, March 25, Isaac Garretson, Bellefontaine, Ohio.

The mode of moulding and striking brick, March 28, James Parker, Gardiner, Maine.

The mode of preparing and grinding clay, March 28, do.

The machinery for propelling boats, &c. March 29, Chauncey Crafts, Woodbury, Connecticut.

The gas or vapour engine, April 1, Samuel Morey, Oxford, New Hampshire.

Dry Docks, April 1, Alonson Place, New York.

Heating Calender Rollers, for glazing cloth, &c. April 1, Joel Brimhill, and Thos. Keyes, junr. West Boylston, Worcester County, Mass.

The Bedstead Fastenings, April 3, Edwin H. Badger, Petersburg, Virginia.

Nailing Boots and Shoes by a common last and iron tree, April 5, John Trask, Hadfield, Mass.

The art of Tayloring, April 5, Greenbury Ross, Carlisle, Kentucky.

The Cutters used in slitting mills, April 5, Timothy Allen, Plymouth, Mass.

The mode of sawing shingles, April 6, Oliver Goddard, Bridgeton, Maine.

The machine for jointing and matching boards, April 8, David Gleason and Hiram Frisbee, Betheny, New York.

The wheel power for pumping vessels, April 8, Salem Town and Robert. W. Oliphant, New York.

The washing machine, April 12, Richard V. Mudge, Durham, New York.

The cotton press, April 12, Gideon Glenn, Louisburg, North Carolina.

The machine for manufacturing paper, April 12, Gardner Burbank, Worcester, Mass.

The wire harness for weaving, April 12, Ezra Brown, Cazenovia, New York.

The mode of crooking gun-stocks, April 12, John Schirer, Charleston, S. Carolina

The side hill cast iron plough, April 12, John Shephard, De Reuyter, New York

New Patents Sealed, 1826.

To James Barron, of Birmingham, in the county of Warwick, brass founder, and venetian blind maker, for his invention of a combination of machinery, or apparatus for feeding fire with fuel, which machinery or apparatus, is applicable to other purposes.—Sealed 24th July—6 months.

To William Johnston, of Caroline-street, Bedford-square, in the county of Middlesex, jeweller, for his invention of certain improvements on ink-holders which he conceives will be of public utility.—24th July—2 months.

To William Robinson, of Craven-street, Strand, in the county of Middlesex, Esq. for his having invented or found out, a new method of propelling vessels by steam, on canals or navigable rivers, by means of a moveable apparatus attached to the stem or stern of the vessels.—24th July—2 months.

To William Parsons, of our royal dock yard, Portsmouth, naval architect, for his having invented certain improvements, in building ships or vessels, which improvements, are calculated to lessen the dangerous effects of internal, or external violence.—24th July—6 months.

To William Davidson, of Gallowgate, in the county of Glasgow, surgeon and druggist, for his new invented process or processes, for bleaching or whitening, bee's wax, myrtle wax, and animal tallow.—1st August—2 months.

To Thomas John Knowlys, of Trinity college, Oxford, Esq. and William Duesbury, of Bousal, in the county of Derby, colour manufacturer, for their having invented certain improvements in tanning.—1st August—6 months.

To Count Adolphe Eugine de Rosen, of Princes-street, Cavendish-square, in the county of Middlesex, in consequence of a communication made to him by a certain foreigner, residing abroad, for an invention of a new Engine for communicating power, to answer the purposes of a steam engine—1st August—6 months.

To Joseph Browne Wilks, of Tandridge-hall, in the county of Surrey, Esq. for his invention of improvements, in producing steam for steam-engines and other purposes.—2nd August—6 months.

To Lemuel Wellman Wright, of the Borough-road, in the county of Surry, engineer, for his invention of certain improvements in the construction of trucks or carriages applicable to useful purposes.—2nd August—6 months.

To John Williams, ironmonger and ship's hearth manufacturer, and John Doyle, merchant, both of the commercial-road, in the county of Middlesex, for their invention of an apparatus and process, for separating salt from sea-water, and thereby rendering it fresh, and fit for use.—4th August—6 months.

To Erskine Hazard, a citizen of the United States of North America, but now residing in Norfolk-street, Strand, in the city of Westminster, and county of Middlesex, engineer, in consequence of a communication made to him by a certain foreigner residing abroad, and additions made by himself, for an invention of a method or methods of preparing explosive mixtures, and employing them as a moving power for machinery.—12th August—2 months.

To John Thomas Thompson, of Long-acre, in the parish of St. Martin in the Fields, and county of Middlesex, camp-equipage maker, for his invention of certain improvements, in making or manufacturing, metallic tubes, whereby strength and lightness are obtained, and for

applying them with various other improvements, to the construction of the metallic tube, and other bedsteads.—17th August—2 months.

To James Yandal, of Cross Street, in the district of St. John, Waterloo, in the County of Surrey, private person, for his discovery of an improvement or improvements on apparatus for cooling and heating fluids.—24th August—6 months.

METEOROLOGICAL JOURNAL, JULY AND AUGUST 1826.

1826.	Thermo. Max	Thermo. Min.	Barometer. Morn.	Barometer. Even.	Wind.	Weather.
JULY.						
26	71	56	30,07	30,12	N.—N. E.	Sun and clouds
27	73	53	30,14	30,08	E.	Fair—clear
28	73	57	30,08	29,90	E.	Ditto—ditto
29	76	58	29,96	29,89	S. W.—W.	Ditto—ditto
30	80	62	29,90	29,87	S. W.—W.	Ditto—ditto
31	86	67	29,84	29,82	S. W.	Ditto—thunder
AUG.						
1	75	62	29,87	29,91	N.—N. E.	Cloudy—slight shower
2	76	67	29,86	29.79	E.—S. E.	Ditto—sun—ditto
3	74	62	29,78	29,80	N. E.	Ditto—thunder—rain, 5-16 in.
4	71	61	29,83	29,86	N. E.	Cloudy
5	73	59	29,86	29,84	N. E.	Ditto—fair
6	73	61	29,88	29,94	N. W.—N.	Ditto—ditto
7	78	61	29,97	29,95	N.—W. N.	Fair—clear
8	78	63	29,95	29,87	W.—S.W.—N.E	Ditto—ditto
9	76	63	29,87	29,87	N. W.	Ditto—ditto
10	76	63	29,87	29,77	S. E.—N.	Ditto—ditto
11	64	58	29,69	29,75	W.—S.W.—N.W	Rain ⅜ inch.
12	68	54	29,83	29,93	W.—N. W.	Cloudy—slight showers
13	70	58	29,98	29,90	N. W.—S. W.	Ditto—fair ditto
14	72	55	29,90	29,74	S. W.—W.	Fair—clear
15	73	57	29,87	29,80	S. W.—W.	Ditto—ditto
16	72	60	29,77	29,82	S. W.—W.	Rain ⅛ in.—fair—cloudy
17	70	58	29,89	30,02	W.—N. W.	Fair—cloudy
18	80	64	30,07	30,11	S. W.—S.	Ditto—clear
19	79	63	30,12	29,99	S. W.	Ditto—ditto
20	83	64	29,92	29,80	S.—S. W.	Ditto—ditto
21	72	60	29,82	29,80	N.W.—N.—N.E	Ditto—ditto
22	74	61	29,78	29,74	S.	Ditto—ditto
23	69	61	29,67	29,52	S. W.	Rain ¼ in.—wind
24	72	62	29,53	29,61	S. W.	Fair—cloudy
25	77	64	29,61	29,49	S. W.—S. E.	Cloudy—thunder—rain ⅛ in.

Hitchen, Herts. WATSON PERKS.

D.	H.	M.	
1	17	42	Ecliptic Conjunction or ● New Moon.
4	17	0	☽ in conj. with α in Virgo.
4	18	0	☽ in conj. with ι in Virgo.
5	0	0	☉ before the Clock 1′ 20″.
5	1	0	☽ in conj. with ♀ long. 26° in Libra ☽ lat' 2° 34′ S. ♀ lat. 2° 23′ S. diff. lat. 11′.
7	1	0	☽ in conj. with κ in Libra.
7	6	0	☽ in conj. with λ in Libra.
7	11	0	☽ in conj. with 1 β in Scorpio.
7	11	0	☽ in conj. with 2 β in Scorpio
7	13	0	☽ in conj. with γ in Scorpio.
8	0	0	☿ Stationary.
8	11	45	☽ in □, first quarter.
8	16	0	☽ in conj. with ρ in Oph.
9	14	0	☽ in conj. with 1 μ in Sagett.
9	14	0	☽ in conj. with 2 μ in Sagett.
10	16	0	☽ in conj. with δ in Sagett.
11	0	0	☉ before the Clock 3′ 22″.
11	20	0	☽ in conj. with β in Capri.
14	13	0	☿ in conj. with ρ in Leo.
15	17	57	Ecliptic Opposition or ◉ full moon.
16	0	0	☉ before the Clock 5′ 7″
20	22	0	♂ in conj. with A in Oph.
22	12	0	☾ in conj. with ι in Taurus.
23	0	0	☉ before the Clock 7′ 34″.
23	2	40	☉ enters Libra.
23	3	0	♂ in conj with ϑ in Oph.
23	5	0	☾ in conj. with ζ in Taurus.
23	18	0	☿ in conj. with σ in Leo.
23	21	32	☾ in □ last quarter.
24	5	0	☾ in conj. with γ in Gemini.
24	14	0	♂ in conj. with β in Oph.
27	1	0	☾ in conj. with 1 α in Cancer.
27	3	0	☾ in conj. with 2 α in Cancer.
28	0	0	♅ Stationary.
28	0	0	☉ before the Clock 9′ 15″
28	7	0	☾ in conj. with π in Leo.
30	1	0	☿ in conj. with ♃ long. 27°, in Virgo ☿ lat. 1° 51′ N. ♃ lat. 1° 5′ N. diff. lat. 46.

The waxing ☽ moon—the waning moon ☾

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, July and August 1826.

1826.	Thermo. Hig.	Thermo. Low.	Barometer. High.	Barometer. Low.	Rain in inches.
July.					
26	72	45	30,16	30,10	
27	73	39	30,18	stat.	
28	75	44	30,15	30,09	
29	79	44	30,04	29,99	
30	81	46	29,99	stat.	
31	86	48	29,90	stat.	
Aug.					
1	78	54	30,00	29,96	
2	79	53	29,92	29,85	
3	78	54	29,80	stat.	
4	70	49	29,85	stat.	1
5	71	51	29,90	stat.	,1
6	73	46	29,94	stat.	,025
7	77	50	30,16	30,04	
8	79	49	30,02	29,96	
9	78	47	29,90	stat.	
10	74	51	29,88	77,85	

1826.	Thermo. Hig.	Thermo. Low	Barometer. High.	Barometer. Low	Rain in inches.
Aug.					
11	63	44	29,80	29,79	
12	70	40	30,00	29,88	,05
13	72	37	30,09	29,99	,2
14	78	39	29,89	29,84	
15	73	49	29,99	29,98	
16	74	50	29,90	29,86	
17	74	40	30,05	29,96	,05
18	79	54	30,20	30,16	
19	81	44	30,20	30,16	
20	83	44	30,30	29,90	
21	73	48	29,88	station.	
22	76	49	29,83	29,82	
23	71	48	29,76	29,65	
24	73	49	29,64	29,60	,1
25	80	49	29,68	29,60	,025

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. from Greenwich.

cations of our invention, we proceed to state in what the invention essentially consists, viz. that part of our mechanical invention to be applied for the purpose of *suspending* windows, &c. consists in the adaptation of springs to the stiles of sash windows, &c. for the purpose of effecting a considerable degree of pressure against the frames of the windows, and thereby keeping the sashes suspended in their grooves without the aid of cords, pulleys, and balance-weights, and at the same time permitting them to slide easily.

"In this part of the apparatus exhibited in the drawings, we have shewn a ratchet-wheel and pall, which we consider to be the best construction of the invention; but we do not consider the ratchet-wheel and pall to form an indispensable part of the invention, as the spring-roller would work without the ratchet and pall, though perhaps not in so satisfactory a manner as with it; nor indeed is the roller itself absolutely essential, for the end of the spring might be rounded, or some part of the spring be made to swell out, so as to come in contact with the frame of the window, and answer a similar purpose; all of which variations and modifications of a spring or springs, of whatever shapes, adapted to produce lateral pressure between the sash and the window frame or bead, according to the situations in which the said springs are placed, for the purpose of producing friction, and thereby retaining the sash, &c. suspended, having been contemplated by us as variations of the same principle, we do hereby claim as parts of our said invention. "Our mechanical invention to be applied for the purpose of securing windows, &c." consists in the adaptation of a sliding bolt, capable of being locked as above described, either connected with, or separate from, the suspending apparatus, which said bolt may, if required, be made self-acting, that

is, to project itself forward by a spring, on letting off the trigger which confined it, in the manner above described and exhibited in the several figures of the drawing relating thereto, and which contrivance, or any variation of the same, we likewise claim as our invention, and exclusively appertaining to us, in virtue of the above recited patent."

[*Inrolled August*, 1826.]

To HENRY BERRY, *of Abchurch Lane, in the City of London, Merchant, for his new Invented Improved Method, in different Shapes or Forms, of securing Volatile or other Fluids, and Concrete or other Substances, in various descriptions of Bottles and Vessels.*

[Sealed 3rd December, 1825.]

THIS invention consists in employing the elastic gummy material, called caoutchouc (Indian rubber), in several ways adapted for the stoppers of bottles, or other vessels, by the use of which, the patentee says, he is enabled to effect an elastic resistance against the mouth of the bottle or other vessel, and at the same time to form a perfectly air-tight junction between that and the stopper to which the said caoutchouc is adapted.

The shapes or forms in which this elastic material is proposed to be employed, are arranged by the patentee under three denominations, viz. caps, collars, and plugs, and the manner in which these are to be adapted, is exhibited in the several figures of Plate VI.

Fig. 15, represents the section of a glass bottle of the kind usually employed for holding scents or volatile

to the sides of the hopper. Rotatory motion being given to the shaft *b*, and the hopper previously filled with the materials for making brick, the knives cut the clay, and mix it up with the breeze, conducting it, as the materials become incorporated, into the cylindrical part *e, e*. The shaft *b*, is hollow, and turns upon another shaft within, to which the circular inclined plane *f*, is affixed; this is made to turn in an opposite direction to the cutters *c*, and as the material descends into the cylindrical part, the circular inclined plane forces it down into the chamber *g*, below.

A drum-wheel, *h, h, h*, is made to revolve upon an axle, the periphery of which drum is divided into rectangular compartments; each of these compartments is designed as a mould for forming one brick, and as the drum goes round, the clay and other material is forced into the compartments by a plunger *i*. This plunger is connected by its rod *j*, to a revolving crank, *k*, and as the crank goes round, the plunger is made to advance and recede, allowing the materials to descend into the chamber as the plunger is withdrawn, and in its advance, pressing the material with considerable force into the recesses or compartments of the rotatory drum.

The drum as it proceeds in its rotatory movement, causes the outer surface of each brick thus formed, to be scraped off smooth by the scraper *l*, which is made to spring up and accommodate itself to the polygonal figure of the periphery of the rotatory moulds, and each mould is furnished with a small piston that slides in and out, for the purpose of giving place to the material in moulding the brick, and of protruding it out of the mould when so formed.

One mode proposed by the patentee of working these pistons, is shewn in the figure, and consists in attaching

to the fixed arms *m*, *m*, a wiper *n*, and wheel *o*, which, acting against the back ends of the piston rods, cause the pistons to be moved as the drum goes round, in the manner shewn in the figure, and described above.

As the moulds in their rotation proceed to the lower side of the drum, the wheel *o*, protrudes the pistons forward, and discharges the bricks *p*, *p*, on to boards, placed upon the endless chain *q*, which being drawn forward by the rotation of the wheel *r*, conduct the bricks away to the drying-room. The drum continuing to revolve, brings the ends of the small piston rods against the wiper *n*, and thereby causes the pistons to be drawn back again, giving place to the material which is about to be pressed into the moulds.

This machinery is to be put in motion by means of a steam-engine or other first mover, the rotatory power of which, is to be applied to the main axle *s*, and to turn it at the rate of about two and a half rotations per minute; at the same time, causing the tooth-wheel *l*, affixed to this axle, to revolve, which taking into the wheel *n*, upon the axle of the rotatory drum, actuates the drum and the moulds in the manner above described, and also turns a pinion upon the axle of the crank *k*, that actuates the plunger *i*. Upon the main axle *s*, there is also a beveled toothed-wheel *v*, which takes into, and actuates a pinion, upon a vertical shaft in the back part of the machine, and this shaft having a toothed-wheel *w*, taking into the pinion *x*, upon the hollow shaft *b*, causes the knives or cutters *c*, *c*, to revolve in the hopper, at the rate of about fifteen rotations per minute. On the same shaft in the back part of the machine, there is also another toothed-wheel not seen, that drives an intermediate wheel, which actuates the upper pinion *y*, upon the inner shaft; and by that means causes the circular inclined plane *f*, to revolve in an oppo-

site direction to the cutters, at the rate of about four or five turns per minute, and thereby to force the clay and other material into the chamber *g*, ready to be pressed into the moulds by the plunger, as above described.

The bricks being conducted away from the machine as they are produced, by means of the endless chain or band of any required length, they are received into a drying-room, and there placed upon racks to be dried, previously to baking in the kiln. This drying-room is proposed to be heated by means of flues, through which the flames from a furnace are to be directed, or steam-pipes may be employed, extending over the drying-room in different directions; which mode of drying the newly formed bricks, is proposed as an improvement upon the ordinary mode of drying them in the open air, and is claimed as one feature of the patent right.

[*Inrolled May,* 1825.]

To WILLIAM HAYCOCK, *Woollen Cloth Manufacturer, of Leeds, in the County of York, for his Invention of certain Improvements in Machinery for Dressing, and Finishing of Cloth.*

[Sealed July 8th, 1825.]

THIS is an apparatus for steaming, brushing, and pressing of woollen cloths, that is, finishing them in the piece ready for sale. The machine described by the patentee appears so very like that exhibited in the specification of Jones's patent of January, 1824, for an improved apparatus for dressing cloth (see Vol. IX, page 230, and Plate X),

that we should feel disposed to call it the same invention, with the addition of a grindstone and a pair of heated rollers; the latter of which, as we have before noticed, it appears to have now become fashionable to introduce into almost every kind of woollen machinery.

A side view of the machine is represented in Plate VII, at fig. 3; *a, a*, is the piece of cloth passing between and over a series of rollers, for the purpose of being wetted, brushed, heated and pressed. The cloth is first received by the roller *b*, which is covered with felt, or some other absorbent material, in order to condense and imbibe the moisture from the steam-jet *c*, which is a flat box, perforated with holes, passing along the front of the machine, and is supplied with steam from a boiler, through the pipe *d*, having a stop-cock to let the steam on and off; *e*, is a roller suspended in levers, which bears upon the roller *b*, merely for the purpose of distending and guiding the cloth; *f*, is a roller covered with pumice-stone, which is made to revolve against the surface of the cloth, for the purpose of working down the face of the pile (see Vizard's patent for the same, Vol. II, page 170); *g*, is a brushing roller, revolving against the face of the cloth, for the purpose of laying the fibres or pile of the wool smooth in one direction; *h*, is a tension roller, the axle of which is adjustable in the long slots of the standards *i*, in order to keep down the cloth with greater or less pressure against the rotatory brush; *k*, and *l*, are two hollow rollers, heated by steam, passed through the pipe *m*. The cloth is conducted round these two rollers, for the purpose of being heated and pressed, and from thence it is passed through the two drawing rollers, *n*, and *o*, and delivered to the table or roller upon which it is to be folded or wound up.

The evolutions of this machine are performed by apply-

ing the first mover, as a winch or rigger, to the axle of the toothed-wheel *p*, which wheel taking into the teeth of other wheels connected to it, move the train, and thereby actuates the whole of the revolving rollers. The specific claims of this patent are, the steam-box *c*, the grinding roller *f*, and the heated pressing rollers *k*, and *l*.

[*Inrolled, January*, 1826.]

To John Linnel Bond, *of Newman Street, in the Parish of St. Mary-le-bone, in the County of Middlesex, Architect, and* James Turner, *of Well's Street, Mary-le-bone, aforesaid, Carpenter and Builder, for their Invention of certain Improvements in the construction of Window Casements, Folding Sashes, (usually called French Sashes,) and Doors; by means of which, the same are hung, and hinged, in a manner adapted more effectually to exclude rain and wind, and to afford a free circulation of air.*

[Sealed 9th March, 1825.]

The patentees apply this invention principally to what are denominated French sashes, that is, such window-frames as open upon vertical hinges, like doors; and in order to close these kind of sashes in a manner that shall more effectually exclude wind and rain at the bottom, or sill, than the ordinary modes of hanging such sashes are capable of doing, they place a bead or ledge of wood on the sill within the window, which forms a rebate for the bottom of the sash to bear against, and thereby prevents the wind and rain from beating under it; but as the sash

would by this bead be prevented from opening, the inventions which form the subject of the present patent are modes of enabling the sashes to rise without difficulty, and by that means to allow them to pass over the bottom bead in opening.

Plate VII. fig. 4, exhibits in section a portion of the sill of a window; *a*, is one of the French sashes in question; *b*, is the bead at bottom, broken away near the hinge, for the purpose of shewing the operative parts of the invention. To the lower hinge-plate of the sash, a strong pin *c*, is affixed, which, passing through a socket, forms the hinge upon which the sash opens and shuts; *d*, is a lever, turning upon a fulcrum in the middle, upon one end of which, the pin *c*, rests, and at the reverse end a weight is suspended, for the purpose of partly balancing the sash, which, with the pin, bears upon the opposite end of the lever; but the weight of the sash being the heaviest, while stationary the lever preserves the situation shewn. In opening the sash, its knob or handle is to be gently lifted, which allows the weight to force up the pin at the hinge, and thereby to raise the sash above the bead, which now turning upon its pin as a hinge, passes over the bead without impediment.

Another mode of raising up the sash, so as to enable it to pass over the bead, is shewn at fig. 5; *a*, is a portion of the sash; *b*, the sill. A cylindrical piece or pin *c*, is affixed by means of a plate to the sill; *d*, is a cylindrical socket let into the stile of the sash, in which the pin *c*, works, and by that means forms a hinge for the sash to turn upon. Within the socket *d*, a helical spring is inserted, which bearing upon the end of the pin, sustains the weight of the sash, but is not sufficiently powerful to raise it until the hand is applied to the knob or handle, and then a little force exerted causes the sash to rise; and as

it turns upon the pin as a hinge, to open over the bead or ledge at bottom, as before described. When the sash is closed again it sinks below the sill by its own gravity, and the spring-catch *e*, falling into a recess, holds it in that situation until the catch being drawn back, allows the sash to be raised.

In order to make way for the lower sash to rise, a space is left between that and the upper sash, equal to the height of the bottom bead, which space is to be covered, as shewn in the section, fig. 6, by a plate *a*, attached to the meeting-bar of the lower sash on the inside; and also a plate *b*, attached to the meeting-bar of the upper sash on the outside.

For the purpose of allowing French sashes to slide up and down, as well as open upon hinges, a contrivance is proposed, shewn in section, at fig. 7; but in this case the lower sash must stand within the upper sash, as in ordinary sliding windows; *a*, is the lower sash; *b*, is the upper sash. To the upper sash a cylindrical tube *e*, is affixed, and to the lower sash a similar tube *d*, which is intended to slide within the upper tube like a telescope. A hook is fixed into the top of the upper tube, from whence a cord is passed down and under a pulley at the bottom of the lower tube, and thence upwards again over a pulley in the side of the window-frame, with a weight suspended like ordinary sliding sashes; the lower part of the sash being supported by a pin, upon which the sash turns as a joint. From this contrivance it will be perceived that the lower sash is enabled to slide up and down to the extent of the telescope tubes; and also that it is capable of turning horizontally upon the tubes as a hinge joint.

[*Inrolled May*, 1825.]

To Samuel Dennison, *of Leeds, in the County of York, Whitesmith, and* John Harris, *of Leeds, aforesaid, Paper Mould Maker, for their Invention of certain Improvements in Machinery for the purpose of making Wove and Laid Paper.*

[Sealed 1st January, 1825.]

The object of this invention, is to make sheets of paper of any length, by the employment of what may be called a rotatory mould. The first feature of the invention is the general disposition of parts, not in themselves new, but which, together, constitute a paper-making machine of a novel character; and secondly, the peculiar mode of constructing the rotatory sieve or mould upon which the paper is formed.

Plate VIII. fig. 1, is a side view of the apparatus, the operative parts being shewn in section; *a*, is a vat or vessel into which the pulp is introduced, mixed up with water, which is kept at a certain level, by flowing out of another vat contiguous; *b*, is a rouser, or rotatory beater, kept in constant motion, for the purpose of agitating the pulp; *c*, is the rotatory sieve or mould, on to the periphery of which the pulp is received at *d*, and as the mould goes round, the water draining from the pulp, through the bars of the mould, leaves the pulp formed into paper; *e*, and *f*, are two drum-wheels, over which an endless band of felt *g*, is passed: and the drum *e*, coming in contact with the periphery of the rotatory mould, causes the felt to take up the newly formed paper from off the mould, and to conduct it away in the direction of the arrow.

Another endless band of felt is passed over the drum

h, and over the roller *i*, which, guiding the sheet of paper between them, brings it to the squeezing-rollers *k*, *k*, where the water is expressed; and the paper carried forward between the felt, is further pressed by the drums *f*, and *h*: and being discharged thence, is taken up and folded upon the rotatory vane *l*, which, when sufficiently full, may be removed by cutting across the sheet of paper, and another vane placed in its stead.

It will be seen, that by this apparatus, paper of any length may be made; that is, as long as the mould keeps revolving, the paper will continue to be produced in an endless sheet.

The mould is made to revolve in a vessel of water, for the purpose of washing away any of the pulp which might adhere to its surface; and it is further considered to be desirable, that it should be moved or agitated in a lateral direction while at work, in order to prevent the pulp sticking to it. This may be done by means of a crank and connecting-rod, attached to the end of its axle, and by many other contrivances. It is also desirable that rotatory brushes *m*, *m*, should be made to act against the surfaces of the felts, for the purpose of removing any of the pulp that might attach itself to them; and also that jets of water should play upon the felts, in order to wash them perfectly clean. It is scarcely necessary to add, that rotatory motion being given to any of the rollers, the same is communicated to all the others by bands or by gears.

The claims of the patentees, consist in the first place, in the general arrangements of parts, as above described, constituting a machine of a novel construction for making paper; but a very important part of the invention, is the mode of constructing the rotatory sieve or mould.

This sieve or mould is made in the form of a drum,

having cross-arms like a wheel, by which it is attached to an axle. Several of these wheels being placed side by side upon the axle, and braced together, their rims form the skeleton of the drum, the periphery of which is to be completely covered with an open grating, formed by connecting together a series of copper bars or ribs. Fig 2, shews the edge view of these bars or ribs, which are to be formed with small elevations on one side, as *a*, and may be made by passing thin sheets, strips, or bars of metal, between flatting-rollers, one of which rollers, having grooves cut in it, in the direction of its axis, will give the desired form to the rib. These ribs are then to be united together, as at *b*, by solder, and being attached to the hoops of the drum, as aforesaid, produce the grating or sieve, which constitutes the foundation of the rotatory mould. This description of mould forms the second feature of the invention, and is claimed as part of the patent right.

[*Inrolled July,* 1825.]

To George Augustus Kollman, *of the Friary, St. James's Place, in the County of Middlesex, Professor of Music, for his Invention of certain Improvements in the Mechanism and general construction of Piano-fortes.*

[Sealed 26th February, 1825.]

This invention is a new arrangement of the mechanism of a grand piano-forte, in which first the external form of the instrument is considered to be improved; secondly,

the hammers are made with a counter-balance at the opposite end of their levers ; thirdly, a catch is introduced to hold the hammer after it has struck the string, and prevent its rebounding ; fourthly, the dampers are introduced and made to act in a new way ; the whole of which improvements we have endeavoured to embody and exhibit in plate VIII. at fig. 3 ; but the sketches accompanying the specification, inrolled by the patentee, are so extremely rude, and the descriptions given of them so far from intelligible, that with the exception of the four leading heads above recited, we feel ourselves unable to lay before our readers a definite explanation of the contrivance.

The figure represents a section of a grand piano-forte constructed upon the improved plan, in which a rising part *a*, *a*, in front, is intended to inclose the principal part of the mechanism, and to form a desk for the music-book. This arrangement allows more room for the knees of the performer than is usually afforded in instruments of this kind, consequently the legs of the instrument may be shorter, and the performer not compelled to sit upon so high a seat as is usually the case.

The strength of the instrument, by the introduction of cross-beams, is considered to be greatly promoted, and the metal arches which heretofore were employed for supporting the sounding-board, are altogether dispensed with ; nor is the sounding-board perforated with holes, as in other instruments, for admitting the ends of the keys, but is extended in one entire piece from end to end.

The sounding-board is represented at *b*, *b*, over which, the strings *c*, *c*, are extended, and supported by thin bridges as usual. The end of the string is attached to the pin *d*, which passes obliquely through the front board, and a screw nut on the outside allows the pin to be drawn

back, and the string brought to its proper tension, which is done without opening the instrument; and is another feature particularly pointed out as new.

The striking of the key *e*, having caused the hammer *f*, to fall upon the string *c*, the counterpoise at the reverse end of the lever *g*, raises the hammer again, and the catch *h*, taking hold of it, prevents the hammer from rebounding. The dampers *i*, which are supported by a cross-rail, not shown in the figure, are raised by a projecting piece at the end of the key, and when the finger is removed from the key, the damper falls again, and stops the vibration of the string.

These are the principal parts in which any novelty is claimed; and it is said, that a similarly constructed mechanism may be adapted to every other description of horizontal instruments of this kind, as well as to the grand piano-forte.

[*Inrolled April*, 1825.]

To WILLIAM HENSON & WILLIAM JACKSON, *both of Worcester, Lace Manufacturers, for their Invention of Improvements in Machinery for making Lace or Net, commonly called Bobbin Net.*

[Sealed 11th January, 1825.]

IN our tenth volume, when treating of Lingford's patent, page 180, we took occasion to point out the various principles or plans upon which machines for the manufacture of bobbin net lace have been made. The present improvements are founded upon one of those principles;

viz. the circular comb plan. The patentees state, that in the ordinary circular comb machines, it is necessary to pass the bobbins ten or twelve times between the warp threads to effect the formation of one entire hole or mesh of the net; but by their improved mode of constructing the machine, the bobbin has to pass through the warp threads only six times, which being a diminution of the labour, will of consequence expedite the manufacture.

Plate VIII. fig. 4, is a section of the machine, designed merely to shew the situation and intention of the improved parts. It may, however, be necessary to slightly describe those parts which have been heretofore in use, in order to render the whole intelligible; *a*, is the roller upon which the warp threads are wound; *b*, is the slay through which they are conducted up to the guides *c*; *d*, *d*, are the points upon which the meshes or holes of the net are formed, by the twisting of the weft or bobbin thread round the warp threads, from whence the lace is drawn up on to the work-roller, *e*; *f*, *f*, are the bobbins and carriages sliding to and fro upon the circular combs *g*, *g*, which are fixed upon the comb bars *h*, *h*, in the ordinary way.

The particular feature of novelty in this machine is the rack or toothed-segment *i*, *i*, and its fluted shafts *k*, *k*, *k*, *k*, which are designed to actuate the bobbin-carriages; *l*, *l*, *l*, is a heart or cam-wheel revolving upon the shaft *m*, which may be turned by any rotatory power, or even by a treadle, when the machine is worked by hand; *n*, *n*, are the two upright bars of a rocking-frame, which vibrate upon pivots *o*, *o*, at bottom. Near the middle of each upright bar a friction roller *p*, *p*, is placed, against which, the periphery of the cam-wheel is intended to work.

The rack or toothed-segment *i*, *i*, is suspended by an

arm *q*, and swings upon a pivot at *r*. The longest upright bar of the rocking-frame on the right hand, is connected at top by a link *s*, to the end of the arm *q*, of the toothed-segment, and consequently the vibrations of the upright bar *n*, cause the toothed-segment *i*, to swing to and fro also.

It will now be seen that as the cam-wheel revolves, moving the upright bars in the manner described, that the arm *q*, will be made to vibrate and drive the toothed-segment to and fro, in a circular course concentric with the pivot *r*.

The fluted shafts *k*, which turn on axles bearing in plummer blocks, affixed to the comb bars *h*, *h*, have each of them a toothed-pinion at their further extremity, which pinion taking into the rack or teeth of the segment *i*, causes the fluted shafts to be turned round as the segment swings; and teeth being formed on the under sides of all the bobbin-carriages *f*, which take into the grooves or flutes of the shafts *k*, the rotation of the shafts as just described, cause the bobbins and carriages *f*, to be moved to and fro on the circular combs *g*, *g*, passing the weft or bobbin-threads through between the warp threads; and the shogging or lateral motion of the comb bars, which is common to other lace machines, shift the positions of the bobbins, and cause them to twine the weft threads round the warp threads as they pass to and fro, and thus to weave or twist them together, which twist being taken up upon the points *d*, from the holes or meshes of the net.

[*Inrolled July*, 1825.]

For a complete description of the construction and operation of an entire lace making machine, see Crowder's patent, vol. XI, page 57, and plate III.

To Thomas Robinson Williams, *of Norfolk Street, Strand, in the County of Middlesex, being one of the People called Quakers, for his Invention of an Improved Lancet.*

[Sealed 16th July, 1825.]

This surgical instrument, designed for opening veins, is inclosed in a small box or case, and the lancet being connected to a spring-roller, is to be let off by means of a trigger, pressed by a small boss or knob on the side. When the end of the box of the instrument has been placed over the part intended to be operated upon, the trigger is pressed, which, discharging the spring-roller, causes the lancet suddenly to strike down, and produce the required incision in the vein, from whence the blood immediately flows.

Plate VIII, fig. 5, represents the external appearance of the apparatus, inclosed in its case or box; fig. 6, is an edge view of the same; fig. 7, is a section of fig. 5, or the side of the box being removed to exhibit the interior; *a*, is the blade of the lancet, which is attached by a pin to the roller *b*; this roller turns upon an axle in its center, let into the sides of the case. Within the roller there is a convolute spring, similar to a watch-spring, one end of which is secured to the box, and the other to the roller; consequently the roller, when turned round to the right winds the spring up to tension, and the roiler being then confined by a trigger *c*, as at fig. 7, is ready for operation.

The instrument being now placed with the bottom edge of the box bearing upon the skin of the patient, the finger of the operator presses the knob *d*, which by with-

drawing the point of the trigger from the notch of the roller, releases it, and allows the convolute spring within to carry the roller round upon its axis with considerable velocity and force; the blade of the lancet being by these means forced down into the situation shewn by dots, perforates the skin and the vein of the patient, and then is drawn up again on the opposite side to that position shewn in the figure, the point having made not merely a puncture but a sweeping cut by the range of the blade, regulated between the guide pieces *e, e;* and the requisite depth of this cut may be adjusted by sliding the upper part of the box *f*, which contains the apparatus, higher or lower in the case *g*, which is to be made fast by the screw *h*.

[*Inrolled July,* 1825.]

To Jacob Mould, *of Lincoln's Inn Fields, in the County of Middlesex, Gentleman, in consequence of a communication made to him by a certain foreigner residing abroad, for certain Improvements in Fire Arms.*

[Sealed 19th February, 1825.]

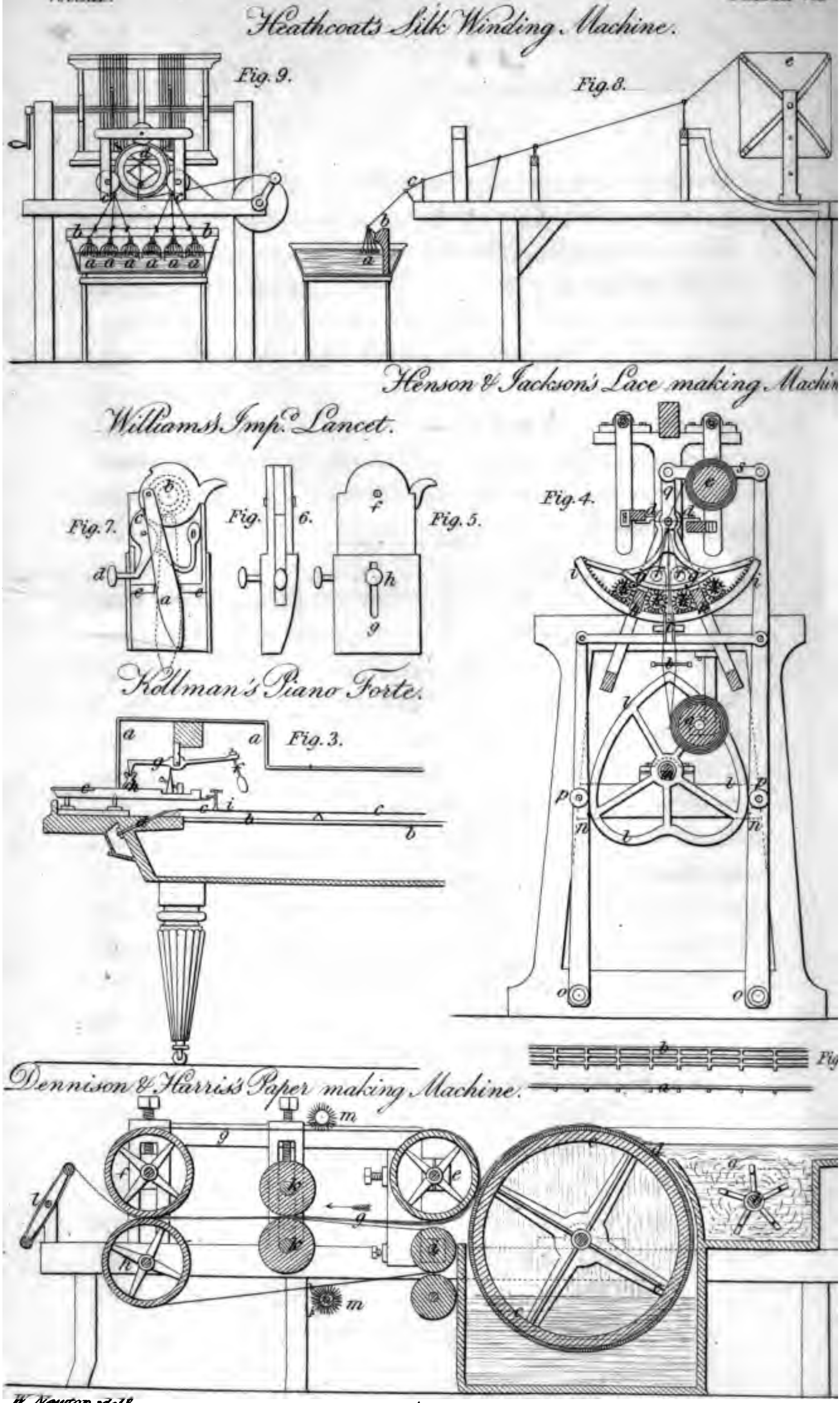
It is proposed to load the barrel of a fowling-piece or other gun of the ordinary construction, with several charges of powder-shot, and wadding, the charges to be rammed down one after the other in succession, until the barrel is nearly full to the muzzle. A number of touch-holes are to be perforated in the barrel, corresponding to the situations of the several charges; and a self-priming lock, which is to be of the percussion kind, having its

priming magazine connected to it, is to slide along a groove in the stock, on the side of the gun-barrel, for the purpose of being adjusted to any of the several touch-holes; beginning the firing of course at that touch-hole and charge which is nearest to the muzzle of the piece, and sliding the lock towards the breech, as the several charges are exploded.

There are to be caps by way of guards to the several touch-holes, which the lock as it recedes is intended successively to open; and there is a long bar extending from the ordinary trigger connected to the sear of the gun-lock, which lies against it as the lock slides along the barrel. This bar is by the pulling of the trigger moved in that sort of way that the cock is let off and the priming exploded in the same manner as in ordinary percussion-guns.

The details of this singularly constructed gun need scarcely be further explained, as the contrivance is said to be applicable to almost every description of fire-arms, and of consequence the forms and adaptations of its several parts must be in every such instance varied. It is only necessary to say, that the patentee prefers to discharge these guns by percussion, and recommends that a self-priming magazine may be attached, which shall deposit the priming by the cocking of the piece, and the communication be cut off by the descent of the cock. He further directs that all the charges be made of equal quantities, so as to occupy given spaces of the barrel, answering to the situations of the touch-holes; and says that half the usual quantity of gunpowder will be found sufficient, always preferring the coarse-grained powder, as that will ignite most readily, and be better able to resist the force of the rammings down, which should be as light as possible.

[*Inrolled, August*, 1825.]



W. Newton del^t. 1st October, 1826. S. Bellin sculp^t.

To JOHN HEATHCOAT, *of Tiverton, in the County of Devon, Lace Manufacturer, for his Invention of certain Improvements on the Method or Methods of Manufacturing Silk.*

[Sealed 11th February, 1825.]

IN our Tenth Vol. page 351, and Plate XVIII, we gave the specification of Mr. Heathcoat's patent for "preparing and manufacturing of silk, for weaving and other purposes," which consisted in drawing off the filiaments of silk from the cocons floating in hot water, and guiding those filiaments in a convenient way to the spindles and flyers of the twisting or spinning apparatus, in order to form the threads, without the intervening processes of hanking and winding. The present invention may be considered to be an extension of the objects of the previous patent, and to consist in a mode of combining the operation of drawing off the silk from the cocons, with the processes of twisting or doubling its filiaments into threads, and then winding those threads up, on to a reel.

The apparatus employed for this purpose, (but which is not claimed as new), is shewn in Plate VIII. Fig. 8, is a side view, and fig. 9, a front view of the machine. The cocons are shewn connected in bunches of five or six, floating in the water-troughs at *a, a*; the filiaments of the several cocons which form each bunch, are brought together, and passed through small eyes or guides, set in the bar *b*; from whence, each thread so formed, proceeds to other guides or eyes *c*; and there the filiaments from three bunches making fifteen or eighteen, or any other equal number of cocons, collectively constitute one

tive operation of the contrivance, having, in her voyage encountered a turbulent sea, without feeling, while seated upon the cushion, any of those unpleasant sensations of nausea, which are attendant upon the peculiar agitation of a rolling and pitching vessel. The French plan, which has been incorporated with Mr. Pratt's previously concerted contrivances, has produced a simple piece of furniture, which, on ship-board, will be found to be extremely desirable for the use of invalids, and all persons who are susceptible of being affected with that distressing malady, sea-sickness.

The invention appears also to be capable of very extensive use on land, by adapting it to the seats of chairs, sofas, couches, mattrasses, and particularly as beds for sick persons, the elasticity of every part of the cushion affording the greatest ease to the persons reclining upon it, by returning to its distended figure the moment that the partial pressure is removed, or shifted from place to place: which is not the case with feather beds, or any description of mattrasses or elastic cushions that we have heretofore used.

The interiors of these cushions are furnished with springs of a peculiar construction, covered on the top with a bed of horse-hair, and the space necessarily left unoccupied within, may be conveniently adapted to receive bed-cloathes; by which means a bed or mattrass upon this plan may be constructed so that with all its appendages it may be packed up in the dimensions and form of a travelling portmanteau. The materials of which these couches are made being of themselves so simple and cheap, it is probable that they may be furnished to the public in a complete state at one third the price of an ordinary bed and bedstead.

Vallance's new mode of communication.

In our tenth volume, page 114, and plate V. we gave the particulars of Mr. Vallance's extraordinary project of impelling a carriage through an extended tunnel, by the pressure of air at one end, opposed to a partial vacuum at the other. Impracticable as such a scheme may appear a cylindrical tube of about one hundred and fifty feet long and six feet diameter has actually been constructed at Brighton, with its carriage and air-pumps adapted, and we understand that the carriage has been impelled along upon the principle proposed, by the pressure of the air alone.

We have by favour of Mr. Vallance personally examined this apparatus, and ridden in the carriage, but at the time we were admitted, the inventor not being previously apprised of our visit, some parts of the machinery had been displaced for the purpose of adapting them more conveniently. We therefore feel ourselves in justice bound to refrain from any remarks upon the scheme until we have seen it in what the inventor may consider to be its more perfect form; and have merely mentioned the existence of the experimental apparatus, intending as soon as we are permitted, to witness its complete performance, to lay before our readers a detailed account of the construction and effect.

Polytechnic and Scientific Intelligence.

ROYAL SOCIETY.

[Continued from page 100.]

March 16.—N. A. Vigors, Esq, and —— Pearson Esq. were admitted Fellows, and the name of —— Hawkins, Esq. was ordered to be inserted in the printed lists of the Society. The reading of Mr. Herschel's paper, of which we shall probably give an account in our next, was resumed and concluded.

A paper was also read, on the Expression of the Parts of Machinery by signs; by C. Babbage, Esq. F.R.S.

In contriving his calculating engine, Mr. Babbage found great difficulty from not having any regular method by which he could find, at an instant's notice, the precise time at which any given piece began to move, and also the state of motion or rest, at the same instant, of all the other parts. He therefore devised a method of expressing all the motions of any machine, however complicated, by signs. This it is almost impossible to describe without figures; but the following statement of the information which may be derived, almost at a glance of the eye, from the paper on which the "mechanical rotation" of any machine is expressed, will serve to show the important purposes to which the method may be applied.

1. The name of each part is written at length, and there are references from the name to all the drawings.

2. The number of teeth on each wheel, pinion, rack, or sector, is seen.

3. Any given part, a wheel for example, being named, it will be seen what immediately moves it, what drives the mover, and so on up to the origin of motion; and not only will the whole succession of movements be visible, but the manner in which they act; as, for instance, whether by being permanently connected, or in the manner of a pinion driving a wheel, or by stiff friction, or at intervals only.

4. The angular velocity of each part will be seen.

5. The comparative angular velocity, or the mean velocity.

6. All those parts which require adjustment will appear; and the order in which those adjustments should be made is pointed out.

7. At any part of the cycle of the engine's motion, it will be seen at a glance what parts are moving, what are at rest; and it will appear in what direction the motions of the moving parts take place, and whether their velocity is uniform or variable. It will also be seen whether any given bolt or click is locked or not.

8. Any part being named, the entire succession of its motions and intervals of rest is at once presented to the eye; and if the contemporary movements at any particular time be required, they will be visible adjacent to it.

Mr. Babbage gives, as specimens of his method, the mechanical notation of the common eight-day clock, and of the hydraulic ram.

In consequence of the approaching fast and festival, the Society then adjourned over two Thursdays, to meet again on April 6.

April 6.—W. C. Milne, Esq. the Rev. Dr. Nicol, and R. Keith Douglas, Esq. were respectively admitted Fellows of the Society; and Mr. Weaver's name ordered to be inserted in its printed lists.

A paper was read, entitled, " Observations made with an invariable pendulum at Greenwich, and at Port Bowen in the Arctic Circle by Lieut. H. Foster, R.N. F.R.S." The ellipticity of the earth deduced from these observations is $\frac{1}{309\ 63}$.

April 13.—R. I. Murchison, Esq. Sec. G.S. was admitted a Fellow of the Society: and the following papers were read:

On the Diurnal Variation of the needle at Port Bowen; by Capt. W. E. Parry, R.N. F.R.S. and Lieut. H. Forster, R.N. F.R.S,

The diurnal variation of the needle at Port Bowen is stated to be never less than 1°, and sometimes to amount to 7° or 8°; the observers have recognized a determinate connexion between it and the positions of the sun and moon.

On the Dip of the Needle at different Latitudes between Woolwich and Port Bowen; by Lieut. Forster.

On the magnetism imparted to Iron by Rotation, at Port Bowen; by the same: with remarks by S. H. Christie, Esq. M.A. F.R.S.

April 20.—John Sharpe, Esq. was admitted a Fellow of the Society; and a paper was read, entitled, " A Formula expressing the Decrement of the Law of Human Mortality." By Thomas Young, M.D. For. Sec. R,S.

April 27.—A letter from Benjamin Bevan, Esq. to Dr. T. Young, For. Sec. RS., was read, described some experiments on the Elasticity of Ice.

In this communication, Mr. Bevan first refers to some experiments on this subject, made by him in the year 1824, in which the modulus of elasticity of ice appeared to be above 6,000,000 feet, with the view of comparing their results with those he obtained last winter from experiments on a larger scale. In the latter, a prism of ice

100 inches long 10 inches wide, and of the mean thickness of 3·97 inches, being tried with weights up to 25 pounds, exhibited a deflection of $\frac{206}{1000}$ of an inch, which gives for the modulus 2,100,000 feet; and on examining the calculations from his former results, the author detected an error in the reduction, by the correction of which he found them to indicate the same modulus as his more recent experiments. In these, ice of various thickness, from one and a half inch to four inches, and whether tried on the water, or taken out and tried in the same way as wood or metal, gave by computation the same modulus, as in the instance just related.

Mr. Bevan states that Dr. Young, in his valuable lectures, has given 700,000 feet for the modulus of elasticity of water, computed from Canton's experiments on the compression of that fluid; but taking Canton's results under another point of view, Mr. Bevan finds the modulus they indicate to be 2,178,000 feet; which very nearly agrees with the result of his own experiments on the elasticity of ice.

In a note to this paper, Dr. Young, states his opinion that the same modulus should be yielded by solids and by fluids; and he also refers to an experiment of his own, made some years ago, on the sound given by a piece of ice, in which the modulus did not appear to be greater than 800,000 feet.

A paper was also read on the application of the Floating Collimator to the Dublin circle; by John Brinkley, D.D., F.R.S.; communicated by the Board of Longitude.

Dr. Brinkley details, in this paper, the results of an examination to which he has subjected Capt. Kater's Floating Collimator; they are favourable in the highest degree to the utility of the instrument, which belongs, Dr. B. says, rather to a future age of practical astronomy, than to the

present. He finds the collimator to be applicable to any circle, without introducing any errors whatever of its own.

Society of Arts.

Proceedings of their Committees.

[Continued from page 45.]

Committee of Mechanics.

Jan. 26th.—James's mode of preparing horn for comb-makers and other purposes, by inserting the pieces of horn in chambers heated by plates of hot iron, and pressing them in that state until they become flattened.—Murrell's safe bolt or fastening for doors and windows, which is to be locked by a key, after it has been shut forward; the key raising certain spring tumblers, which prevents its being opened until the same key is again introduced.

— 9th.—Hinneken's instruments for generating or forming a true screw, by placing a cutter obliquely against the cylyndrical piece of which the screw is to be made; when, by turning round the cylinder, a correct thread is produced thereon.

Feb. 2nd.—Hooper's level and square for building; two spirit levels, inserted in a long narrow board at right angles to each other.

— 16th.—Packham's truss for hernia, having a small slot in the arm, which receives the boss or button at the back of the pad, and allows the pad to slide with the motion of the body.—Collgate's wooden leg, in which the stump of the limb is pressed into a conical wooden socket at top of the leg, without padding, which is

intended to prevent the inconvenience arising from perspiration.

Feb. 23rd.—Whiteman's machine for eccentric turning, to be placed in a slide rest, and to be actuated by a lathe.

March 2nd.—Deyke's life-boat, rendered buoyant by attaching air-vessels, such as bladders, or close wooden or tin boxes, filled with cork or other light material.—Stacey's fire-engine and fire-escape; the engine, consisting of two forcing-pumps and levers, running upon four wheels, has a stage or platform on the top, from whence other platforms may be raised by a windlass, and planks laid from thence to the sills of windows, to afford the means of escape.—Cawen's improvements on dry grinding, by employing a sort of winnow, by which a current of air is produced, that blows the fine particles and dust up a tube out of the building.—Barrel's mode of preventing houses taking fire, by placing plates of iron and plaster between the ceilings and floors of every story in the house.

— 9th.—Lewis's contrivance of an arched or hollowed endless screw, to be applied to the peripheries of toothed-wheels, in preference to a straight screw, as affording a more equal bearing against the curved edge of the toothed-wheels.—Cowling's method of passing boats and other vessels, through tunnels, by extending a long chain, covered with leather, from fixed stations, at fifty feet distance; and causing the persons who have the conduct of the boat, to haul upon the chain until the vessel has passed through.—Heath's method of working collieries, which consisted in a great variety of suggestions, chiefly respecting the construction of channels, for the free passage of air, and the mode of ventilating mines in general.

— 10.—William's drag for the recovery of drowned

bodies, which is a small chain to be extended across a river, or other piece of water, having a series of small grappling irons suspended, which as the chain is drawn along are intended to fall and drag into all the holes, and iregularities at the bottom of the water.—Therold's mode of communicating with a strandard ship; by firing from a morter over the ship a grappling iron attached to a rope, so as to form a communication with the shore, the peculiar kind of reel upon which the rope is to be coiled constituting the principle feature of improvement.—Lyon's mode of preventing the loss of lives in cases of shipwreck, by fastening bladders and cases filled with air, or Indian rubber to the swimmer.

Feb. 16th.—Holmes's craniotomy forceps being improvements upon those invented several years back, by Dr. Davis, and rewarded by the Society.—Fay's instruments for extracting teeth.

— 23rd.—Aust's engine pump with circular tubes and air vessels.—Jenour's method of preventing the accidental overthrow of wheeled-carriages; by suspending the body to elevated springs, and allowing it to swing from points very much above its center of gravity.—Hartley's hand-rail seater for joiners to facilitate the formations of curves in the construction of hand-rails.—Miller's work-box and dressing case for ladies, consisting of an arrangement of small draws and boxes conveniently disposed for a portable toilet.—Gommerall's tips for umbrellas, formed by cutting the ends of the whalebone ribs smooth and round.—Bailey's method of preventing accidents frequently caused by the falling of the horse in a two wheeled carriage; placing props under the shafts or fore part of the vehicle, with friction rollers at bottom.—William's mode of preventing the overturning of stage coaches by placing swinging props on each, which sup-

ports the body of the coach in the event of its falling over. —Ellicombe's cover for plug-holes in the public streets, consisting of a cap with a pin, to be placed in the hole for the purpose of carrying, in order to prevent horses and other animals becoming lame by their feet catching in the holes.

Feb. 30.—Battery's yard measure coiled in a small box by means of a spring similar to spring roller blinds.—Clark's cupping apparatus consisting of a set of surgical instruments suited to the performance of the operation of cupping.

April 13th—Hall's proposal for preventing two wheel carriages coming down when the horse falls by the employment of a prop.—Patterson's warming-pan for beds, an hollow vessel to be filled with hot water.

— 14th —Charrington's portable arm chair upon the plan of an ordinary camp stool, the legs folding together. —Fith's apparatus for making bricks, consisting of a square mould with partition capable of forming twenty-four at one time, which is to be inverted upon a board covered with prepared clay and pressed upon the clay by a lever; but without any contrivance for withdrawing the brick when so moulded.—Alderson's instrument for drawing arcs of large circles.—Palmer's improved machine for ruling lines on copper or steel plates, the novelty consisting in the form of the slide rest.

— 20th —Shuldam's anchor with a jointed-stock designed for close stowage.—Carey's iron knees for ships to afford strength and stability; also improved blocks and dead eyes.—Carter's bit with a roller for chain cables to be used when the ship rides at anchor.—Spencer's mode of steering a ship when the rudder head is disabled, by adapting a chain instead of the tiller.—Gibson's ventilation of ships to prevent dry-rot.

Apr. 27th.—Porter's plan for making roads, and the pavings of street by lines of smooth stones for the wheels of carriages to run upon.—Cross's model of a bridge upon a novel construction.—Duce's door-lock, of a peculiar construction, which cannot be picked, or opened by a false key, and which gives an alarm when an attempt has been made to open it, by discharging a pistol.—Bussher's fly-trap, which is a cylinder, open at both ends, with contracted channels, and having sugared paper, or some such matter, within, to attract the flies; the ends are to be closed by a string when many flies are within, and the vessel being immersed in hot water, destroys them.

— 28th.—Thomas's compound lever, by which it is proposed to obtain an increase of power.—Hall's paddle-wheels, the paddles being made to descend into and ascend from the water in perpendicular positions by being connected at their lower parts to an eccentric wheel.—Conner's substitute for a fly wheel, consisting of a vertical double rack, and a wheel moving within which has teeth round one half of its periphery, for the purpose of converting the reciprocating motion of the piston into a rotatory motion.—Dean's building scaffold, consisting of poles, connected together by pins passed through holes in the poles at the junctions, instead of binding them together by cords.—Marshall's temporary scaffold for painters and plasterers, consisting of a series of levers connected by pivots like lazy-tongs.—Magson's valves for water mains, intended to be employed at the street plugs, in frosty weather, in which the lever of the cock is constructed in an improved manner.

ASTRONOMICAL SOCIETY OF LONDON.

[Continued from page 104.]

The paper of M. Struve, mentioned in our last as having been read before the society also details the results of micrometrical measurements of Jupiter and its satellites, made with the same instruments, and with the same power 540, or from thence to 600. The mean results at the mean distance of the planet from the earth, are,—

1.	Jupiter's major axis	......	38″·442
2.	minor axis	......	35 ·645
3.	compression	......	0 ·0728 or $\frac{1}{13\cdot71}$
4.	Mean diam. ♃'s 1st Sat.	.....	1″·018
5.	2d	.....	0 ·914
6.	3d	.....	1 ·492
7.	4th	.....	1 ·277

Schröeter and Harding have often imagined that they have detected a deviation of Jupiter from the elliptical form; and so thought Struve at first; but a closer examination enables him to explain the illusion. On March 7th this year, he thought the diameter which extended from 61°·4 lat. preceding S. to 61°·4 lat. following N., was obviously smaller than the ellipsis would allow. But the micrometric measurement proved that that was not the case. That evening the major axis, A, was 44″·75; the minor axis, B, was 41″·72; and the diameter in question

taken with the same micrometer, was 42''·34. Calling this diameter x, and the latitude on the planet, l, we have $x = \frac{A.B.}{(A^2 \sin^2 l \times B^2 \cos^2 l)^{\frac{1}{2}}}$, and the numerical result is $x =$ 42''·38, differing only 0''·04 from the measurement. Most probably it is the slanting position of the axis of the ellipse with regard to the vertical circle which causes this illusion.

Lastly, there was terminated on the same evening, an " Account of some Observations made with a twenty-feet Reflecting Telescope, by J. F. W. Herschel," Esq. Foreign Secretary of this Society. This valuable communication is divided into four sections. The first contains descriptions and approximate places of 300 new double and triple stars. The telescope with which the observations were made, is one of the " front view" construction; aperture 18 inches, focal length 20 ft. It was constructed in the year 1820, under the joint superintendence of Mr. Herschel and his venerable father. Its light with its full aperture enables it to reach the faintest nebulæ of the third class, while with an aperture of 10 or 12 inches it serves to define double stars of the first class of an average degree of closeness. Mr. Herschel briefly describes the method of differences employed in *sweeps* of the heavens, the modifications introduced into the process on account of Mr. Herschel's being deprived of the valuable assistance of his aunt, Miss Caroline Herschel, his classification and characteristics of the *magnitudes* of the stars from the 7th to the 20th inclusive, of which none of the three last can be seen with the least illumination, but comprehend the stars seen or suspected in resolvable nebulæ. Mr. H. then presents an example of the method in which the business of a " a sweep is conducted, and of the

method of obtaining from it the approximate right ascensions and polar distances of the objects which it comprises; accompanied by several instructive remarks. The table exhibits, in eight columns, the approximate places of 321 new double and triple stars, for Jan. 1, 1825, with their estimated angles of position, distances, magnitudes, and other particulars. A great many of the double stars tabulated in this paper, exhibit the highly interesting and curious phænomenon of contrasted colours; in combinations of white and blue or purple, yellow, orange, or red, large stars, with blue or purple small ones: red and white combinations also sometimes occur, but with less frequency. In all these cases, the excess of rays belonging to the less refrangible end of the spectrum falls to the share of the large star, and those of the more refrangible portion to the small. Another fact not less remarkable, and rendering highly probable some other relation than that of mere juxta-position, is, that though red single stars are common enough, no example of an insulated blue, green, or purple one as yet been produced.

The three remaining sections of this paper comprise observations of the second comet of 1825; an account of the actual state of the great nebula in Orion, compared with those of former astronomers; and observations of the nebula in the girdle of Andromeda. The account of the comet, and that of the great nebula in Orion, are accompanied with illustrative drawings, and the latter also, with a kind of map representing the whole as a constellation, in which the parts are named agreeably to a rude resemblance which the whole nebula presents to the head snout, and jaws of some monstrous animal. Aided by these drawings, the verbal account presents an instructively perspicuous description of the truly interesting phænomenon to which it relates.

Manufacture of Glass.

(From the Annals de l'Indust.)

Muriate of soda and sulphate of soda, may be employed, and at times with advantage in glass making. A casting is readily obtained of very fine glass, having when about three or four lines in thickness a very slight green tinge. Its composition as follows—decrepitated muriate of soda, 100 parts, slaked lime, 100, sand, 140, clippings of glass of the same quality from 50 to 200 parts. Sulphate of Soda likewise offers a great economy in its employment; the results are very satisfactory, the glass made with salt was of a very fine quality: the following is the composition. Dry sulphate of soda 100 parts, slaked lime 12, powdered charcoal 19, sand 225, broken glass from 50 to 200. These proportions give a rich coloured glass, which may be employed with advantage where a fine quality is wanted. The following is the second way of operating with sulphate of soda:—dry sulphate 100 parts, slaked lime 226, sand 500; broken glass from 50 to 200. According to this process it is easy to operate in a regular manner and to avoid expensive trials in the manufacture.

Preservation of Trees from Frost.

A Gentleman at Gloucester is said to have tried an experiment on trees, which appears to be very likely to succeed, and deserves to be known. Previous to their budding out, the wood was washed over with linseed-oil, applied with a common painting brush; this appears to have rendered them completely impervious to frost, and they seem likely to bear an abundance of fruit.

New Patents Sealed 1826.

To John Charles Schwieso, of Regent-street, in the County of Middlesex, musical instrument maker, for his invention of improvements on certain stringed musical instruments—Sealed 22nd August—6 months.

To Timothy Burstall, of Leith, Scotland, and John Hill, of Bath, Engineers, for their invention of certain improvements in the machinery for propelling loco-motive carriages—22nd August—6 months.

To Francis Halliday, of Ham, in the county of Surrey, Esq. for his invention of certain improvements in raising or forcing water—25th August—6 months.

To William Downe, Senior, of Exeter, in the county of Devon, Plumber, and Brass-founder, for his invention of certain improvements on water closets—25th August—6 months.

To Robert Busk, and William King Westly, of Leeds, in the county of York, flax-spinners, for their invention of certain improvements in machinery for flecking or dressing and for breaking scutching or cleaning hemp-flax or other fibrous substances—29th August—6 months.

To William Day, of the Strand, in the county of Middlesex, trunk and camp equipage maker, for his invention of certain improvements on bedsteads, which improvements are also applicable to other purposes—31st August—6 months.

To Thomas Robinson Williams, of Norfolk-street, Strand, in the county of Middlesex, Gent. for his having invented

or discovered a machine for separating burs or other substances, from wool, hair, or fur—18th September—2 months.

To Thomas Robinson Williams, of Norfolk street, Strand, in the county of Middlesex, Gent. for his having invented or discovered an improved method of manufacturing hats and caps with the assistance of machinery—18th September—6 months.

METEOROLOGICAL JOURNAL, AUGUST AND SEPTEMBER 1826.

1826.	Thermo.		Barometer.		Wind.	Weather.
	Max	Min.	Morn.	Even.		
AUG.						
26	71	61	29,58	29,67	S. W.	Sun and clouds
27	69	58	29,74	29,81	W.—N. W.	Ditto—ditto
28	76	58	29,83	29,76	W.—S. W.	Ditto—ditto
29	76	66	29,74	29,68	S. W.	Ditto—ditto—slight showers
30	81	66	29,61	29,55	S. W.	Ditto—ditto—lightening
31	74	62	29,62	29,64	S. W.	Ditto—ditto
SEPT.						
1	70	62	29,64	29,63	W.—S.W.—S.E.	Rain ⅝ in.—cloudy
2	64	59	29,61	29,57	N. E.	Ditto—1¼ in wind
3	70	61	29,63	29,73	N· E.—S. E·	Cloudy
4	73	62	29,74	29,74	S. W.	Ditto—rain 7-16 inches
5	66	56	29,73	29,66	W.—N. W.	Cloudy—slight showers
6	64	54	29,45	29,—	E. S.	Rain 1¼ in thunder
7	56	52	28,98	29,44	N.—N. W	Ditto—9-16 in Wind
8	63	52	29,40	29,53	W.—var.	Ditto—5-16 in ditto
9	63	53	29,55	29,71	N. W.	Sun and clouds
10	64	53	29,77	29,88	N. W.—W.	Ditto—ditto—wind
11	66	50	29,94	30,—	W.	Ditto—ditto—ditto
12	63	53	30,—	29,93	W. N.—W.	Ditto—ditto
13	68	53	29,88	29,77	W.	Fair—clear
14	66	52	29,70	29,88	W.—N.	Cloudy—rain 1-16 in.
15	68	45	30,01	30,07	N. W.	Fair—clear
16	66	46	30,06	29,93	S.	Ditto—ditto
17	72	52	29,85	29,78	S.	Ditto—ditto
18	61	55	29,72	29,63	E.—N. E.	Rain 1 inch
19	72	51	29,72	29,73	S. W.	Fair—clear
20	61	52	29,71	29,81	N. E.	Cloudy—rain—1-16 in. wind
21	64	50	29,88	29,94	E.—N. E.	Sun and Clouds
22	64	45	29,94	29,93	S.—S. E.	Fair—clear
23	66	40	29,87	29,77	S. E.	Ditto—ditto
24	62	55	29,63	29,55	S. E.—S.	Cloudy—rain, 1-16 in.—thunder
25	67	58	29,53	29,58	S.	Ditto—slight rain

Hitchen, Herts. WATSON PERKS.

D.	H.	M.	
1	3	29	Ecliptic Conjunction or ● New Moon.
2	2	0	☽ in conj. with α in Virgo.
2	3	0	☽ in conj. with ι in Virgo.
2	22	0	☿ in conj. with ν in Virgo.
4	8	0	☽ in conj. with κ in Libra.
4	13	0	☽ in conj. with λ in Libra.
4	17	0	☽ in conj. with 1 β in Scorpio.
4	17	0	☽ in conj. with 2 β in Scorpio
4	20	0	☽ in conj. with γ in Scorpio.
5	0	0	☉ before the Clock 11′ 27″.
5	23	0	☽ in conj. with ϱ in Oph.
6	20	0	☽ in conj. with 1 μ in Sagitt.
6	20	0	☽ in conj. with 2 μ in Sagitt.
7	1	0	♀ in conj. with δ in Scorpio.
7	19	10	☽ in □ first quarter.
7	22	0	☽ in conj. with δ in Sagitt.
9	2	0	☽ in conj. with β in Capri.
10	0	0	☉ before the Clock 12′ 51″.
11	23	0	♀ in conj; with σ in Scorpio.
13	21	0	♀ in conj. with α in Scorpio.
14	16	0	♂ in conj. with λ in Sagett.
15	9	46	Ecliptic Opposition or ◎ full moon.
18	0	0	♄ Stationary.
19	20	0	☾ in conj. with ι in Taurus.
20	0	0	☉ before the Clock 15′ 3″
20	12	0	☾ in conj. with ζ in Taurus.
21	12	0	☾ in conj. with γ in Gemini.
21	23	0	☿ in conj. with λ in Virgo.
23	10	48	☉ enters Scorpio.
23	14	50	☾ in □ last quarter.
23	20	0	♃ in conj. with η in Virgo.
24	11	0	☾ in conj. with 1 α in Cancer.
24	12	0	☾ in conj. with 2 α in Cancer.
24	22	0	♀ in conj. with A in Oph.
27	5	0	☿ in conj. with 2 α in Libra.
28	0	0	☉ before the Clock 16′ 2″
29	13	0	♂ in conj with α in Virgo.
29	13	0	☾ in conj. with ι in Virgo.
29	18	0	♂ in conj. with ψ in Sagitt.
30	0	0	☉ Eclipsed, invisible at London.
30	13	22	Ecliptic conj. or ● New Moon.
31	9	0	☽ in conj. with ☿ long. 19° in Libra ☽ lat. 23′ S. ☿ lat. 1° 5′ diff. lat. 42′.
31	18	0	☽ in conj. with κ in Libra.
31	22	0	☽ in conj. with λ in Libra.

The waxing ☽ moon—the waning moon ☾

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, AUGUST AND SEPTEMBER, 1826.

1826.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low.	
AUG.					
26	71	50	29,73	29,65	
27	70	41	29,90	29,80	
28	75	40	29,90	29,89	
29	76	54	29,84	29,77	
30	82	47	29,67	29,64	
31	74	51	29,72	29,70	
SEPT.					
1	72½	47	29,70	29,69	,1
2	67	49	29,64	29,60	,05
3	66	52	29,77	29,67	,425
4	71	45	29,80	stat.	
5	67	46	29,80	29,76	
6	64	44	29,48	29,13	,4
7	55	42	29,50	28,50	,1
8	68	37	29,55	29,53	,525
9	61	39	29,84	29,66	
10	65	39	29,96	29,88	

1826.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low	
SEPT.					
11	68	34,5	30,08	30,02	
12	66	34	30,08	30,04	,05
13	66	36	29,97	29,90	,2
14	70	56	29,80	stat.	
15	63	32	30,15	30,06	,075
16	63	32	30,15	30,04	
17	70	32	29,90	29,82	
18	63	42	29,77	29,60	,075
19	69	50	29,80	29,75	,35
20	64	50	29,75	station.	,025
21	63	40	29,98	29,88	
22	57	38	29,99	stat.	
23	60	35,5	29,96	29,94	
24	64	49	29,69	29,59	,1
25	64	56	29,64	29,58	,075

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. of Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

AFRICAN SURVEY.—The expedition sent out by Government, to survey the Coast of Africa, and that of the Island of Madagascar, has made some important additions to our geographical knowledge, and furnished the means of correcting the existing errors, in a variety of instances. Several thousand miles of coast, but imperfectly known before, have been carefully viewed; many parts of which had been very erroneously indicated in the maps, and some of them were not less than two hundred and fifty miles out in latitude and longitude. This vast extent of coast is now perfectly known: every harbour, every bay, every navigable river, has been diligently and carefully explored, and correctly laid down in the charts, which will be published from the results of this unostentatious, but interesting service.

It is with pleasure we learn, that Dr. Meyrick is employed in arranging, according to chronological order, our extensive national collection of armour in the Tower of London. Instead of being, as it has hitherto been, a heterogeneous medley, ascribed most ignorantly to periods to which hardly one piece in the collection did belong, we may now expect to have in it an illustration of history highly interesting to the antiquarian, the artist, and the public in general.

AMERICA.—At Philadelphia, the formation of a new Polytechnic and Scientific College, is about to take place; its intention is the cultivation of literature and the arts and sciences. A petition to the ensuing Congress will claim its legal sanction, and the principal inhabitants of the city itself, patronize the plan of the institution.

ORNITHOLOGY.—On next New Year's Day will be published, the First Quarterly Part of a splendid work, namely, Illustrations of Ornithology, by Sir William Jardine, Bart. and Prideaux John Selby, Esq. with the co-operation of Mr. Bicheno, Secretary to the Linnæan Society, Mr. Children, Zoologist to the East India Company, Mr. Jameson, Reg. Prof. Nat. Hist. Ed. and Director of the Ed. Museum, &c. Mr. Vigers, Sec. of the Zoological Society, and of the late Sir T. Stamford Raffles. The prospectus informs us, that coloured plates of birds, accompanied by descriptions, including their generic and specific characters, references to the best figures of those already published, together with occasional remarks on the nature, habits, and comparative anatomy of the species. The work will be divided into four sections; comprising, first, the illustration of new groups, and new species; second, such subjects as have been described, but not figured; third, those which have been incorrectly represented, or where the variation in plumage, arising from age, sex, or season, has not been particularized; and lastly, in order to render the work complete, all the species which have been already described or figured. The publication will be in Quarterly Parts, royal 4to. with from fifteen to twenty plates, on which will be represented from twenty to thirty species in each.

NATURAL HISTORY.—It is generally known that cold countries have fewer species of plants than warm ones. A learned botanist shews that this difference follows pretty constantly the progression of the temperature; according to him, there are in Spitsbergen only 30 species of plants; in Lapland, 534; in Iceland, 553; in Sweden, 1,500; in Brandenburg, 2,000; in Piedmont, 3,800; in Jamaica, 4,000; and in Madagascar, 5,000.

T. R. Jolliffe, Esq. is preparing for publication, a Narrative of an Excursion from Corfu to Smyrna; with some Account of the Ancient and present State of Athens; and a Translation of the Erastæ of Plato.

Colonel Rothen, of Antwerp, has caused drawings to be taken of all the monuments belonging to the Knights of Malta, at Rhodes, which he intends to publish as a sequel to Verlot's History of the Knights of Malta; they will make about fifty subjects.

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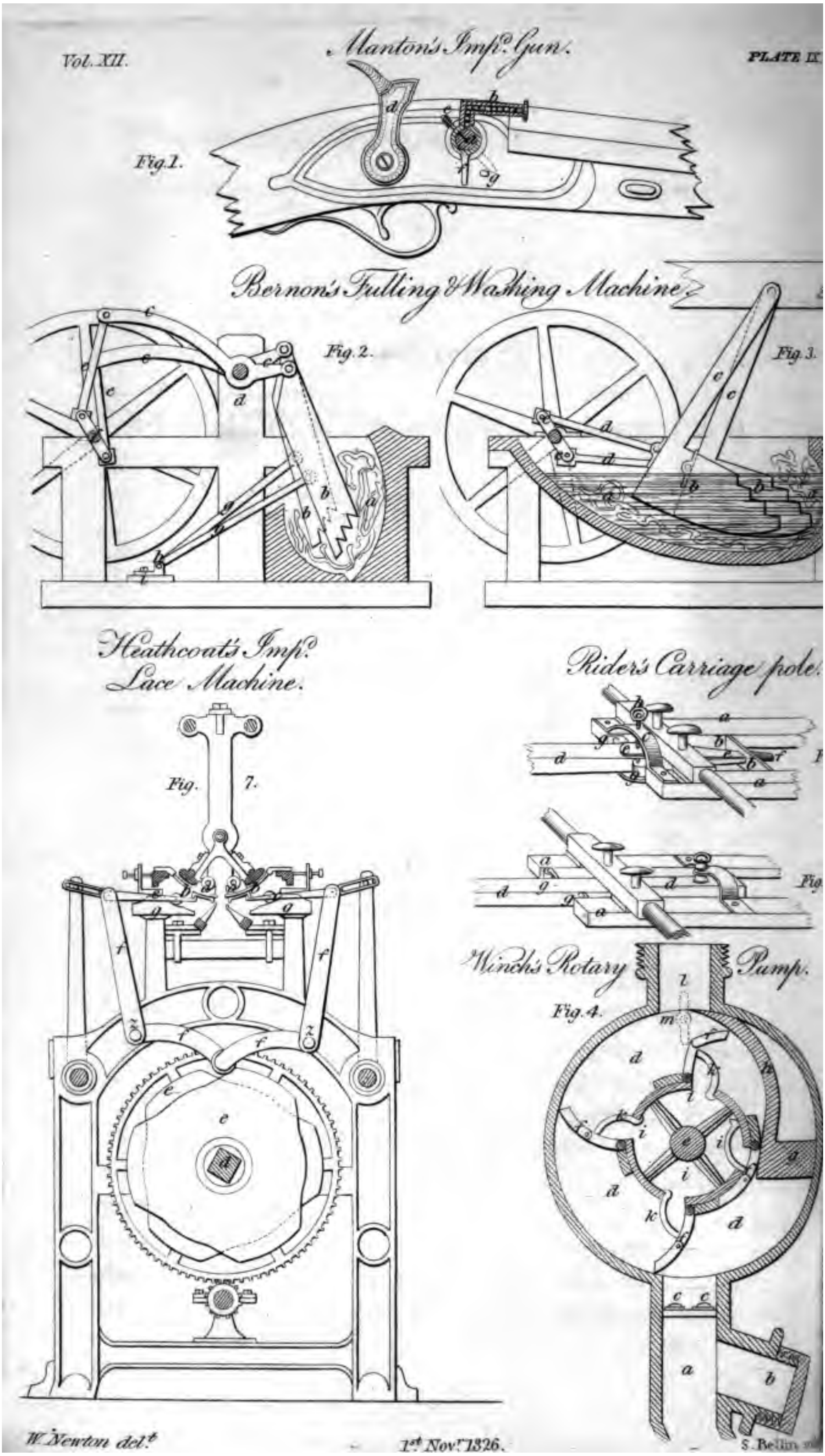

Vol. XII.
Manton's Impd. Gun.
PLATE IX.
Fig. 1.
Bernon's Fulling & Washing Machine.
Fig. 2.
Fig. 3.
Heathcoat's Impd.
Lace Machine.
Fig. 7.
Rider's Carriage pole.
Winch's Rotary Pump.
Fig. 4.
W. Newton delt.
1st Novr. 1826.
S. Bellin

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. LXXIII.

Recent Patents.

To JOSEPH MANTON, *of Hanover Square, in the County of Middlesex, Gun Maker, for his Invention of certain Improvements in Fire-arms.*

[Sealed 26th February, 1825.]

THE improvements proposed under this patent apply to various kinds of guns, intended to be discharged upon the percussion principle, and consist of a stationary magazine, contiguous to which, a ring with a hollow in its periphery, is so adapted, that it may be turned round upon the plug or nipple, for the purpose of conducting a small detonating ball from the magazine to the touch-hole of the piece.

Plate IX, fig. 1, represents part of a fowling-piece on this improved plan; the magazine, the nipple, and the ring, being shewn in section, for the purpose of exhibiting the internal parts more evidently; *a*, is the nipple fixed near the breach of the barrel as usual, in the side of which is the touch-hole; *b*, is the magazine, containing the

detonating balls; *c*, is the ring turning round upon the nipple, and conducting the balls one at a time from the magazine to the touch-hole; *d*, is the cock, actuated by the mechanism behind the lock-plate, as in ordinary guns; *e*, is the punch or pin, which by the fall of the cock is driven with considerable force into the touch-hole of the nipple: and there compressing the detonating ball deposited in the touch-hole, produces the ignition, which explodes the powder within the barrel.

The piece having been loaded with powder and shot, the ring *c*, is to be turned round by means of the lever *f*, which is brought into the situation shown by dots, and is there held by a spring-catch *g*; the detonating ball having been conducted into the recess by the rotation of the ring from the magazine to the touch-hole. The blow of the cock upon the pin *e*, now causes the piece to explode as above said, after which, the lever *f*, is to be returned to its perpendicular position, when another ball descending from the magazine, falls into the recess, ready to be conducted to the touch-hole, as a priming for the next charge.

[*Inrolled, August*, 1825.]

To ALFRED BERNON, *of Leicester Square, in the County of Middlesex, Merchant, in consequence of a communication made to him by a certain Foreigner residing abroad, for certain Improvements in Fulling-mills or machinery for Fulling and Washing Woollen Cloths, or such other fabrics as may require the process of fulling.*

[Sealed 7th June, 1825.]

The patentee states, that the beaters of washing and fulling-mills of the ordinary construction being raised by

rotatory cams, or tappets, and suddenly let fall, are very apt to injure the cloth operated upon: he therefore proposes as the primary feature of his invention to work the beaters of his improved washing and fulling-machine by means of rotatory cranks.

Plate IX, fig. 2, is a view of a stock or fulling-mill upon the improved plan, the side of the trough being removed to shew the interior; *a*, is the trough into which the cloth is introduced, for the purpose of being fulled or milled; *b*, *b*, are the stocks or beaters; *c*, *c*, levers turning upon a fulcrum pin in the standard *d*, which levers are attached at one end to the beaters *b*, and at the other end to connecting rods *e*, *e*, affixed to the rotatory cranks *f*. There are also connected to the beaters by joints other levers *g*, *g*, which turn upon an axle *h*; these are intended to guide the beaters in the troughs, the action of which may be determined and directed by means of the sliding socket and adjusting screw, *i*.

Rotatory motion being given to the crank-shaft *f*, the levers *c*, will be made to vibrate, and these raising and depressing the beaters *b*, will cause the cloth in the trough *a*, to be beaten or operated upon in the manner called milling or fulling.

This apparatus is to be mounted upon suitable bearers, or frame-work, the form of which constitutes no part of the invention, and the motions of the beaters may be made uniform by the attachment of a fly-wheel to the crank-axle. The peculiar shape of the fulling-trough, is however, thought to be of importance, and is made on the front side in the form of a segment of an elipsis, as shewn in the figure; upon the mathematical construction of which, the patentee has dilated at some length.

Fig. 3, represents a machine for washing woollen-cloths, the side of the trough being removed to show the action

of the beaters within. In this machine the principal feature of novelty consists in working the beaters by means of rods connected to a rotatory-crank; *a, a,* is the trough occupied with water, and an alkaline material. Into this trough the cloth intended to be washed is inserted; *b, b,* are the beaters suspended by their arms *c, c,* and which oscillate on pivots, or an axle affixed in a beam above. At the back of the beaters, rods *d, d,* are attached, which are also connected to the rotary cranks *e, e,* and thus by the revolution of the crank-shaft the beaters are made to oscillate, and to beat the cloth, by which means the grease and other impurities attaching to the cloth in its manufacture, are disturbed and washed away by the water, the curved form of the trough throwing the dirty water backward, as it becomes expressed from the cloth.

The claims of the patentee as to novelty are first, the employment of the rotary crank, and connecting rods attached to the beaters of washing and fulling-stocks, instead of working these beaters by means of cams or tappets; by which contrivance it is considered that the action of the beaters will be more certain and effective, and the cloth be less subject to injury than in the ordinary kind of stocks or fulling-mill. Secondly, in the peculiar curved forms given to the troughs as exhibited; and thirdly, in "the principle;" that is, the mathematical rules by which these curves are to be produced or generated. This last feature it is quite obvious can never be maintained as the subject of a patent right.

[*Inrolled December,* 1825.]

To Robert Winch, of Steward's Buildings, Battersea Fields, in the County of Surrey, Engineer, for his Invention of certain Improvements in, or additions to, Rotatory Pumps, for raising or forcing water and other liquids.

[Sealed 5th March, 1825.]

The general construction or principle upon which this rotatory pump is proposed to be made, differs but slightly from some of the rotatory steam-engines which have been described in our preceding volumes, but the action of its pistons are in the opposite direction. Plate IX, fig 4, is a section of a rotatory pump of this kind, with the proposed improvements adapted thereto; *a*, is the rising main of the pump: *b*, a branch to be employed in the event of applying this pump to a fire-engine. A cap, however, must be screwed upon the mouth of this branch, when it is not intended to use the pump for the purpose of extinguishing fire. At the top of the rising-main two valves *c*, *c*, are placed opening upwards. These valves may stand horizontally as in the figure, or may be raised at an angle; *d*, *d*, *d*, is the water-way of the pump in the cylindrical chamber; *e*, the rotatory axle or main shaft; *f*, *f*, *f*, *f*, the rotatory valves or pistons: four or any other convenient number; *g*, the stop, which prevents the passage of water on that side of the cylinder; *h*, the curve for shutting down the rotatory valves or pistons in succession after they have severally raised the volumes of water.

The pistons *f*, are attached by hinge-joints to the rotatory box *i*, *i*, *i*, *i*, and as they come round fall open by their own gravity. In order, however, to prevent the

edges of the pistons from increasing the friction by rubbing against the periphery of the cylindrical chamber, curved guides *k, k, k, k,* are affixed to the pistons, which have catch-hooks at their extremities, intended to stop against the inner edges of the box, and thereby restrain the pistons from falling further back.

The pistons or valves *f*, opening in the lower part of the chamber by their own gravity, as aforesaid, carry forward in succession as they revolve, volumes of water, equal to the content of the portions of the chamber between any two of the pistons, and these volumes of water being raised to the upper part of the chamber, are discharged through the pipe *l*. After the water has been thus raised, the piston or valve *c*, at that time the upper part of the chamber, is made to shut down upon the box *i*, by its outer edge striking against the curve *h*, and in order to assist the closing of the pistons, they are made with a hinge in the middle, which enables them to collapse and to fall into the circular form of the rotatory box *i*, as they pass the stop *g*.

In the event of not constructing the pistons with a joint in the middle as described, a rotatory lever is to be placed in the upper part of the chamber, as shewn by dots at *m*, for the purpose of striking against the backs of the pistons in order to close them. In this case the curve *h*, is to be despensed with, and the rotatory lever to be actuated by means of toothed-gear connected to the rotatory axle *e*, on the outside of the pump.

The particular parts of this rotatory-pump, which are claimed under the present patent as new, are:—First, the catch hooks at the extremities of the curved-guides *k*, which are designed to limit the falling back of the pistons and prevent their edges rubbing against the interior of the chamber. Secondly, the cavities formed in the rotatory

box *i*, which are designed to receive small stones, gravel, dirt, or other matters, that may be accidentally brought up into the pump, by the two rapid ascent of the water. Thirdly, the rotatory arms or levers (shewn by dots at *m*, which are to have small anti-friction rollers at their extremities, and to be employed for closing the pistons, in the manner and under the circumstances above stated. And, lastly, the joints introduced in the middle of the rotatory pistons, for the purpose of enabling them to close without difficulty, when the curve *h*, is attached to the stop *g*, in the manner shewn in the figure.

[*Inrolled September*, 1825.]

To Samuel Rider, *late of Gower place, Euston Square, in the Parish of St. Pancras, but now of Liquorpond Street, in the Parish of St. Andrews, Holborn, in the County of Middlesex, Coach Maker, for his Invention of an improvement in Carriages, by affixing the pole to the Carriage by a new invented apparatus.*

[Sealed 28th April, 1825.]

This invention is a convenient and expeditious mode of attaching and securing a pole to a carriage, and of detaching it when required, in a more simple and ready way than upon the plan hitherto adapted. The leading features of this invention, are, attaching an iron frame to the fetchels in front of the carriage, and having passed the end of the pole into this frame, making it fast by a screw, which attachment may be effected with great rapidity, and by turning the screw the reverse way, the pole may be detached with equal facility.

The contrivance, as adapted to a two wheeled-carriage, is slightly varied from that proposed for a four wheeled-carriage, as the figures representing this invention in plate IX, will sufficiently shew. Fig. 5, exhibits the improved parts detached from the carriage as adapted for a coach or chariot; *a*, *a*, are the fetchels, with the splinter bar affixed to it as usual; *b*, an iron frame attached to the fetchels. In the front part the iron frame is formed as an arch at *c*, which extends round on the under side also, and is there slightly bent. Into this frame the pole *d*, *d*, is inserted, being tapered at the hinder part and having a strap or clasp of iron *e*, with a pin *f*, affixed to it, for the purpose of passing through a hole or slot in the cross-bar of the frame which confines the hinder end of the pole. At the front part of the strap or clasp of iron *e*, on its under side, there are two small wedge-formed pieces of iron extending, for the purpose of locking into the recesses in the blocks *g*, *g*, at the front of the frame.

When the end of the pole *d*, is inserted into the iron frame, between the fetchels as shewn in the figure, the screw *h*, is to be turned, which pressing down the pole with the strap *e*, forces the wedge-pieces above-mentioned into the recesses of the block *g*, and thereby confines the pole securely in its place: from whence it can only be withdrawn by removing the screw which allows the pole to be raised and drawn out of the frame.

Fig. 6, is the contrivance for a two-wheeled carriage; *a*, *a*, are the fetchels with an iron frame affixed, but in this case the arch of the frame is at the hinder part; *d*, is the pole with wedge formed pieces extending at *g*, *g*, and dropping into recesses in blocks for the purpose of confining it. Near the hinder part of the pole a conical-wedge is affixed, which being drawn up by a nut and screw into a hole in the arch, confines the pole securely,

and which can only be removed by releasing the nut and screw.

The patentee states, that a similar contrivance might be adopted to attach shafts to carriages when they are required to be moveable; and that upon this plan the poles of carriages may be affixed and removed with great expedition, and avoid the inconvenience and mischief arising from the pole sticking tight between the fetchels upon the ordinary plan, which they frequently do in damp weather.

[*Inrolled June,* 1825.]

To JOHN HEATHCOAT, *of Tiverton, in the County of Devon, Lace Manufacturer, for his Invention of certain Improvements in Machinery for making Lace Net, commonly called Bobbin Net.*

[Sealed 1st January, 1825.]

THESE improvements apply to that particular construction of machine for making bobbin-net lace, commonly called the *circular bolt machine upon the double tier principle,* and which machine is in this instance intended to be worked by means of a rotatory shaft, with cams, actuated by the power of steam or water, instead of being worked by manual labour, as heretofore.

The patentee has exhibited in his specification a machine very slightly differing in construction from other machines upon the circular bolt principle, and observes, that his present improvements "consist in the combination of two additional locking-bars or fetehers, and the cams or

other contrivances, necessary to move them in connexion with the locking-bars, and driving-bars in common use."

Plate IX, fig. 7, represents a section taken across the middle of the machine, by which the forms and positions of the operative parts will be rendered evident; but as the general construction of the mechanism is not new and of course not to be considered as forming the subject of the present patent, we forbear explaining its minutiæ, and refer our readers to the particular descriptions of the constructions and operations of machines for making bobbin-net lace given in our former volumes. See Lingford's patent for improved machinery for making bobbin-net lace, Vol. X, page 180; Mosley's patent for improvements in making and working machines for the production of bobbin-net lace, same Vol. page 225; and Crowder's patent for improvements in the *pusher* bobbin-net machine, Vol. XI, page 57.

a, a, are the bobbins and carriages intended to slide to and fro in the arc of the circular bolts, *b, b*. They are moved by means of locker-bars or fetchers, which strike against the edges of the carriages, or against the small pieces which project from the under-side of the carriages, and their evolutions are performed in the ordinary way, by the hands of the workmen lifting the respective bars at the required times for shifting one tier of bobbins into the opposite range of bolts, and then bringing back the other set of bobbins, and so on, making the tiers respectively pass, and change their positions, in order to twist the threads round each other, and produce the meshes of the net.

In the present instance, however, the movements of the several bars are not to be performed by manual labour, but by means of levers, or arms, actuated by rotatory cams affixed to a central revolving shaft, which is moved

by the power of steam or water. To a certain extent, this has been effected already, but not in a manner perfectly satisfactory to the patentee; he therefore proposes as the subject of the present patent, the introduction of the additional locking-bars or fetches *c*, *c*, which have a hook at their extremities taking hold of one of the ears of the bobbin-carriage *a*, *a*, for the purpose of drawing the carriage back.

Upon the central revolving shaft *d*, the cam-wheels *e*, *e*, are affixed, and against the periphery of these wheels the friction-rollers at the ends of the bent levers *f*, *f*, are intended to work. As the cams go round the different elevations on their peripheries cause the levers *f*, *f*, to vibrate upon their pivots or fulcrums *z*, *z*, and consequently to move the locking-bars *c*, *c*, which draw the bobbin-carriages from the center toward the sides of the machine.

The cams must be so adjusted that they cause the levers to move the locking-bars to and fro at stated intervals: and to assist their operations small rollers are adapted to the locking-bars, for the purpose of enabling them to run freely upon the pieces *g*, *g*, which have inclined surfaces.

The other movements of the machine and its general construction being well known, and not forming any part of the present improvement, need not be further explained, as the invention is confined to the two additional locking-bars, and the necessary levers and cams, for putting them into operation.

[*Inrolled June*, 1825.]

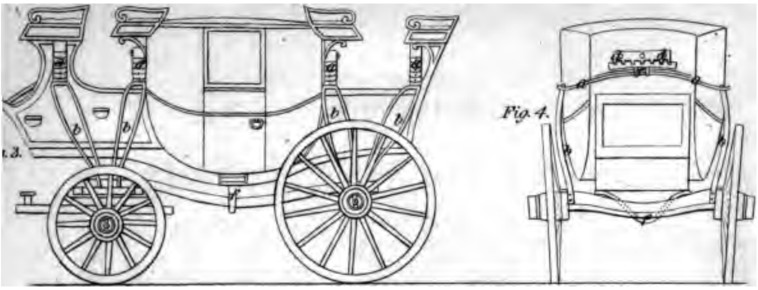
To Edward Lees, *of Little Thurrocks, in the County of Essex, Publican, and* George Harrison, *Brick Maker, of the same place, for their Invention of a new and Improved Method of making Bricks, Tiles, and other articles manufactured with Brick Earth.*

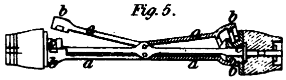
[Sealed 1st February, 1825.]

This is a machine for moulding bricks, tiles, &c. by mechanical means, instead of making them by manual labour. The construction of the proposed apparatus in some measure resembles that described in our present Vol. page 129, under the patent of William Leahy; but as many of the features in both are common to other machines previously introduced for making bricks, particular parts of the details of the mechanism, we presume, are only intended to be claimed as new, under the present patent. What these novelties are, the patentees have not however expressly stated, but have claimed in general terms, such parts only as have never been used before for a similar purpose. See also Hague's patent for making bricks, Vol. II, page 21; Shaw's patent for brick-making machinery, same Vol. page 23; Wright's patent for an improved combination of machinery, for making bricks, Vol. III, page 23.

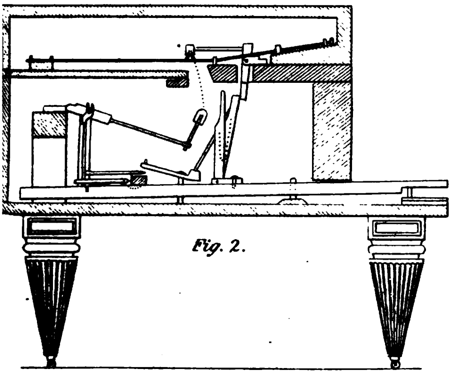
Plate X, fig. 1, exhibits the present improved machine partly in section; *a, a,* is a tub or other vessel made of wood strongly hooped, or of cast iron, and in shape slightly conical toward the bottom: which vessel is intended to receive the clay and other materials that the bricks are to be made of; *b, b,* is a perpendicular shaft, passing through the middle of the tub, and supported by bearings at top and bottom, which shaft has affixed to it several horizontal arms *c, c, c,* with spikes or knives. Rotatory

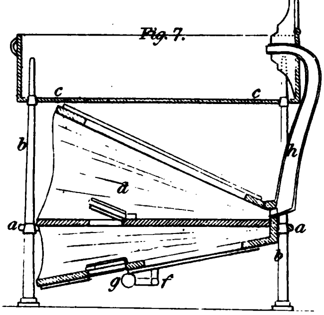
Stafford's Impd. Coach.



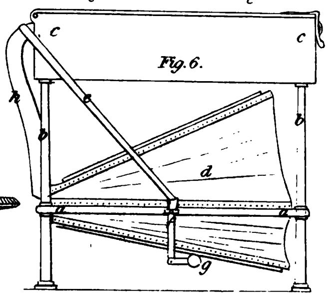


Erard's Impd. Piano-forte.

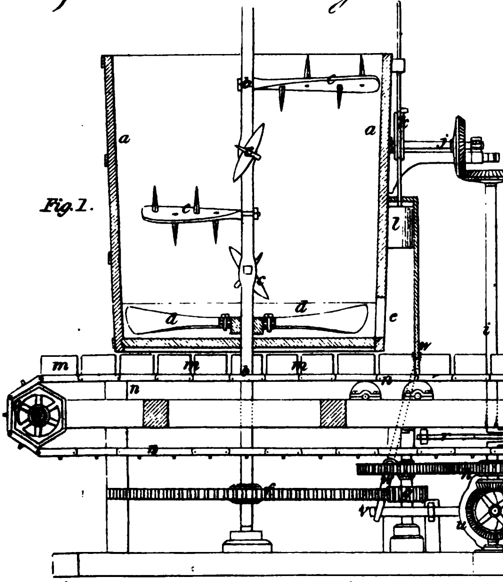
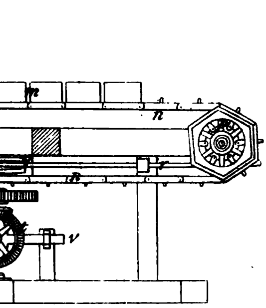




Halley's portable forge.



Lees & Harrison's Brick making machine.

ton delt. 1st Novr. 1826. T. Owen sculpt.

The shaft *i*, before described carries a crank *q*, which acts as a cam within an eliptical ring formed in the bar *r*, and as the shaft revolves, the bar is consequently made to slide backward and forward. Near the end of the bar *r*, there is a long slot into which the loose teeth of a sort of spur-wheel behind the drum *p*, are intended to drop, and thus every time that the bar *r*, recedes, it takes a tooth and turns the drum one-sixth part of its revolution, which advances the endless chain, and brings the moulds *m*, in succession from the left end of the chain under the piston *l*, for the purpose of being by the descent of the piston, rammed full of brick earth. Two strong rollers *s*, *s*, are placed under that part of the chain as a support.

At the lower end of the crank shaft *i*, there is a beveled pinion, which takes into a beveled wheel *t*, and turns it by the rotation of the wheels before described. On the axle of the wheel *t*, there is a cam, which works within the eliptical ring *u*, of the bar *v*, *v*, and as it revolves, causes the bar to slide to and fro. To the end of this bar, a lever *w*, *w*, is attached, and which is consequently made to vibrate upon its fulcrum or pivot, by the sliding of the rod. At the upper end of this lever, a knife is attached, and the arrangements of the mechanism being such, as will cause this lever to move immediately after the piston *l*, has fallen, the knife cuts asunder the clay which occupies the mould, from that which is above it, and the mould is drawn forward, by the advance of the endless chain, as before described, while another empty mould is brought by the same means under the piston, ready to be filled with brick earth, in like manner to the foregoing.

[*Inrolled August*, 1825.]

To Pierre Erard, *of Great Marlborough Street, in the County of Middlesex, Musical Instrument Maker, in consequence of communications made to him by a certain Foreigner, residing abroad for an Invention of certain Improvements on Piano-fortes.*

[Sealed 5th January, 1825.]

The first object of the patentee is to give stability to the wood-work of a piano-forte, in order that the tension of the strings may not draw it out of its figure, and thereby injure the correct tune of the instrument; the second feature, is a peculiar construction of mechanism for effecting the movements of the hammers and dampers, which is founded upon the general principle of "a new and improved application of mechanism, for that species of action, known under the denomination of the escapement" for which the present patentee obtained His Majesty's Royal Letters Patent, dated 22nd of December, 1821, see our IVth Vol. page 230.

For the accomplishment of the first object, it is proposed to introduce plates of iron in vertical positions between the rest-pin plank, and the key bottom. These plates are to be placed in suitable directions as bracers crossing the case of the instrument, and to be secured to each other by screw bolts, rivets, or other fastenings. On the bent side of the instrument pieces rising up through the sounding board are to be attached to the plates, for the purpose of holding screws, the ends of which are to press against the side of the rest-pin plank, in order to form a latteral resistance to the tension of the strings.

This contrivance may be variously modified, and adopted to every description of musical instruments of the

piano-forte kind, the intention being to give stability, and prevent the strings drawing the wood-work out of its proper figure, which is effected by thus increasing the strength of the framing.

In the second part of the invention, it is proposed to place the hammer in a different situation to that of other piano-fortes, yet upon the same principle as described in the former patent, above refered to; the object of which is to bring the head of the hammer nearer towards the center of the finger-key, and at the same time, remove its fulcrum further from the center.

A section of part of the instrument, with one set of the movements, is shewn in Plate X, fig. 2, in which it will be seen, that the operating parts are all mounted on the key, instead of being attached to intermediate levers, as is the case in the mechanical arrangement of almost every other description of piano-forte.

An arrangement of the parts slightly varied in form, but upon the same principle, is also proposed, by which the key is made to strike on the upper side of the string, as in cabinet piano-fortes, and another modification of the same by which the hammer strikes on the front of the string when it is destended in a perpendicular direction, as in upright piano-fortes; but as these constructions so closely resemble each other, it will not be necessary to extend our description of the several modifications of the invention, as the object above described, is intended to be accomplished in both the latter contrivances.

[*Inrolled July*, 1825.]

To DANIEL STAFFORD, *of Liverpool, in the County Palatine, of Lancaster, Gentleman, for his Invention of certain Improvements on Carriages.*

[Sealed 24th December, 1824.]

THESE improvements are intended to apply principally to stage coaches, because in them the dangerous consequences of overturning renders every precaution and safe-guard of importarnce, there are three points particularly claimed as constituting there improvements: first, a novel arrangement of the springs upon which the body of the carriage is suspended, and of the frame-work necessary to complete this arrangement; secondly, a contrivance adapted to the axle-trees, for the purpose of preventing the wheels coming off, in the event of the linch-pin falling out of its place; thirdly, a variation in the internal form of the box of the wheel, through which the axle passes, for the purpose of preventing friction.

Plate X, fig. 3, is a side view of a stage coach, suspended upon this improved principle; fig. 4, is a back view of the same. The body of the vehicle may be of any form or fashion that shall be thought desirable, but the springs which are plate springs of the ordinary kind, are to be placed at the upper part, as *a, a, a, a,* supported by iron framing *b, b, b, b,* which is affixed to the axle-trees of the carriage below. To the upper side of the spring a curved rack is attached, as at *c,* and to the body of the coach a similar rack *d,* is affixed.

The iron framing *b,* being properly secured to the carriage below, and the springs mounted upon the framing as shewn, the body of the coach is then lifted up and placed upon the springs, by the teeth of the racks *d,*

dropping into those of the racks *e*, when the body will been a bled to swing latterally, as if it had been suspended upon pivots.

It will hence be seen that the bearing of the coach body is upon the centres of the springs, and that consequently, it will have all the elastic action of other carriages, suspended upon similar springs, with this additional advantage, that, should any one of the wheels pass over an elevation so as to raise one side of the carriage considerably out of its horizontal position: the body swinging upon the curved racks, will by its gravity preserve its equilibrium, accommodating itself to an erect position, and not be subject to fall over: as other carriages the bodies of which, are suspended much lower, are very liable to do.

In order to protect the body of the vehicle, and prevent its being thrown off the racks, by any sudden jolts which may occur upon uneven roads, a bent rod *f*, is attached to the under side as a guard, which passes beneath the perch, and in the event of the body being raised too high, the guard strikes against the under side of the perch, and keeps it in its place.

Fig. 5, exhibits the improvements proposed to be adapted to the axle-tree. In this figure the parts are shewn in section, at one end of the axle-tree and entire on the other; *a*, *a*, are two arms, each carrying a semicircular cap; *b*, *b*, a rib, within which is intended to drop into a groove in the piece *c*, affixed to the back part of the nave. These capes which are termed coupling boxes, when closed are held fast together by a screw, and by these means the wheel is prevented from coming off its axle, even though the linch-pin has fallen out.

The last subject of improvement is a mode of reducing the friction of the axle against the interior of the box of the wheel, which is proposed to be effected by forming

the interior of the box, triangular, square, or of any other polygonal figure; so that the cylindrical axle shall only come in contact with the edges of the box, instead of embracing it all round, as in the ordinary construction of wheels.

[*Inrolled June,* 1825.]

To William Halley, *of Holland Street, Blackfriars' Road, in the County of Surrey, Iron-founder, and Blowing Machine Maker, for his Invention of certain Improvements in the construction of Forges and on Bellows, or apparatus, to be used therewith or separate.*

[Sealed 5th March, 1825.]

The principle object of the patentee appears to have been to construct a portable forge and bellows, that might be readily moved from place, to place for the use of a marching regiment, or to be occasionally stationed upon the deck of a ship, or elsewhere, and carried away by hand, when no longer wanted in that situation.

Plate X, fig. 6, exhibits the external appearance of a forge and bellows, upon the patentees improved plan; and fig. 7, is a section of the same. The whole of this apparatus is intended to take to pieces, and to pack up in a box, formed by the hearth of the forge, with its side plates and cover.

a, a, is a square frame of iron, passing round the apparatus, and which frame may be considered as the bases of the structure; *b, b,* are four pillars or legs, which support the whole. These pillars are passed through conical

holes, at the four corners of the frame *a*, and having conical shoulders which fit tightly into the holes, form substantial standards. At the top of the legs, the box *c, c,* fits on to similar conical shoulders, and by that means produces a substantial platform or hearth, upon which the fire of the forge is to be kindled.

The bellows *d*, are made fast by their middle flap to the frame *a*, and are worked by a handle *e*, inserted into a socket at the top of the lever *f*. This lever or arm, and a corresponding arm on the opposite side, swing upon pivots mounted on the sides of the frame *a*, and are connected together by a rod *g*, which passes across the machine under the bellows. By depressing the handle *e*, the levers *f*, are made to lift the rods and the bottom flap of the bellows, which on raising the handle falls again by its own gravity, and thus is produced the blast of wind for working the forge.

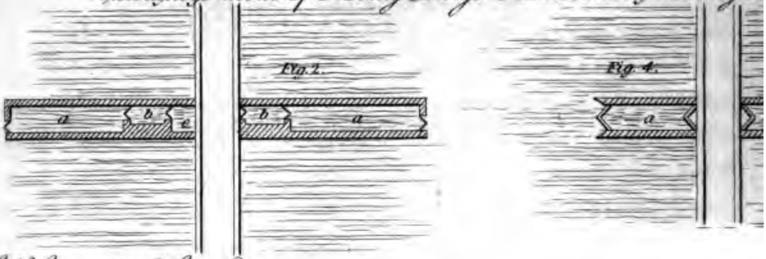
The flaps of the bellows are covered with plates of iron to increase their effect, and are made nearly square, which affords a greater space for the wind than the ordinary heart shaped bellows, and the collapsing of the upper flap forces the blast of wind up the pipe *n*, to the fire which is to be kindled upon the hearth *c*.

When this apparatus is to be removed to a distance, the parts are all taken asunder, the bellows with the frame *a*, are placed upon the hearth *c*, and then the pipe *h*, and the legs *b, b*, are packed on the top and sides of the bellows and the whole shut up in the box: the lid being turned down by its hinge joints upon the box, and secured by a hasp and padlock.

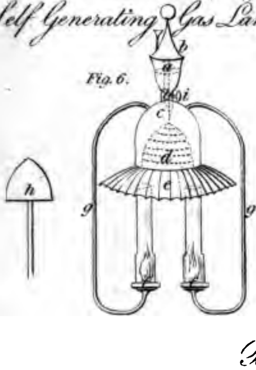
[*Inrolled July*, 1825.]

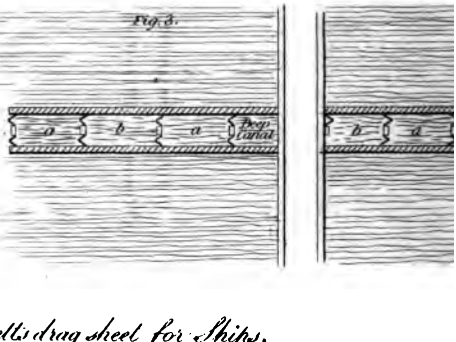
Fig. 1.

Willoughby's mode of Passing Large Vessels through Bridges.

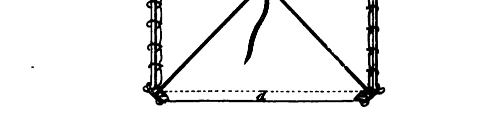


Self Generating Gas Lamp.





Burnett's drag sheet for Ships.



W. Newton del.t 1st Novr 1836. S. Bell

To William Shelton Burnett, *of London Street in the City of London, Merchant, for his Invention of a new method of lessening the drift of Ships at Sea, and better protecting them in gales of wind.*

[Sealed 11th January, 1825.]

It is proposed to distend a large square canvas-sail, and frame it with rods of iron, then to sink it into the water, with a piece of wood on the upper edge to act as a float, and to keep the sail in a perpendicular position. Cords or chains are to be attached to the corners of the frame, and these are to be brought together in the middle and secured by a ring, through which ring, a cable is to be passed, for the purpose of connecting the drag-sheet to the ship or other vessel; and the resistance of the broad surface of this drag-sheet against the water, is to prevent the vessel from drifting.

Plate XI, fig. 5, represents this drag-sheet, attached to its float-board, and destended ready for use; *a, a,* is the the float-board in which a cavity is formed to receive a roller *b.* At the ends of this roller two iron rods *c, c,* are attached by joints, and to the lower parts of these rods another roller *d,* is connected by links. A sheet of strong canvas or sail-cloth is then stretched upon this frame, and cords being connected with a ring and cable as above said, the apparatus may be considered to be ready for use.

The frame with the drag-sheet, is now to be lowered into the water, and the board *a,* floating upon the surface, while the iron frame sinks under it, the sheet is kept in a perpendicular position; its broad surface forming a considerable resistance to the water; and the vessel which is attached to the drag-sheet by a cable before described,

pulling directly against the broad surface of the sheet is by these means, prevented in a great degree from drifting.

This apparatus may be made in different ways, its form may be varied, and also its dimensions, which of course must depend upon the size of the vessel to which it is to be attached. It may be employed with great advantage, to prevent drifting at all times, but particularly when the wind blows strong into shore, and under some circumstances, it may be used with good effect as a substitute for an anchor.

In the figure above refered to, the parts are so contrived that the sheet may be rolled up, and with the side-rods lashed close to the float-board, which is the most convenient mode for enabling it to be stowed away on shipboard, and is so simple that it may be distended and put in operation in a few minutes.

[*Inrolled July*, 1825.]

Original Communications.

To the Editor of the London Journal of Arts, &c.

SIR,

CONSIDERING the vast extent and immense population of the Metropolis westward of London Bridge, I need not attempt to occupy your pages with an elaboraie preface to my projected improvements, pointing out the importaut advantages, I might almost say, the indispensable necessity of rendering the River Thames navigable above bridge to vessels of considerable burden.

The repeated proposals which have been before the public, for constructing new Docks, in the Isle of Dogs, Bermondsey, and elsewhere, as repositories particularly for coal, sufficiently shew the propriety of extending the present sphere of navigation upon the Thames, and quoting the language of one of our most respectable daily papers—"would it not be a great advantage to the inhabitants of the metropolis if some plan could be devised, by which these vessels (colliers,) could be discharged above bridge?" I think it would; and herewith respectfully submit to your consideration, and that of the numerous readers of your interesting Journal, a plan that I have long had in contemplation, by which, the Navigation of the River Thames might be considerably improved, and other rivers also might be navigated by large vessels *above bridge*.

Presuming the principle objection to the passage of large vessels at high water through the bridges, to arise from the necessarily contracted dimensions of the arches in height, and which difficulty has not yet been proposed to be removed, except by the employment of draw-bridges, I have devised a plan by which vessels that are not absolutely wider in their hulls than the span of the arches, may be enabled to pass the bridge, and proceed up the river to any part where the water is sufficiently deep to carry vessels of such burden. My mode of effecting this object, is by constructing *sunken canals*, with lock-gates under one of the arches of the bridge, and admitting the vessels singly, into the locks, and through the canal in a similar manner to that, by which boats are passed from different elevations on canals, a view of which contrivance supposed to be adapted to one of the arches of the New London Bridge, with a vessel passing through, is shewn in perspective in Plate XI, at fig. 1.

The necessary measures having been provided for, the erection of the New London Bridge, sink a canal in the very bed of the river itself, running from below to above its site, grasping an arch of sufficient breadth for one vessel to pass, parallel to the south shore, and about one hundred feet from it; the canal being nearly fourteen hundred feet in length, including the breadth of the bridge, and divided into five basins, provided with flood-gates of communication, as represented in the plan, plate XI, fig. 2; *a, a*, docks on a level with the river, and each about 450 feet in length; *b, b*, locks of communication 125 feet in length; *c*, deep canal 125 feet in length besides the passage under the bridge.

Let the canal be constructed of such depth, and containing sufficient water, that ships completely laden with their topmasts struck, and having their yards placed fore and aft, as they are directed for the West India Docks, may pass under the said arch, which will require that the surface of the water in it be many feet below the level of the river, even when this is at its lowest ebb.

The docks being on a level with the river, let the one to the east, in the first instance at high water, receive twelve vessels (that being the number I will presume each dock may be calculated to contain) which are intended to pass up; and into the dock to the west, twelve vessels intended to return down, and at the lowest ebb of the tide close the two outward flood-gates.

In this situation of the vessels exchange the contents of the two docks, by allowing two vessels at a time from each, to descend by the locks into the lower canal, as usually practised, and to ascend after passing beneath the bridge in an opposite direction.

Each lock must of course just hold two vessels at a

time, having their jib-booms eased in sinking, to occupy less space.

The towage for the ingress and egress of the shipping may be assisted, if not altogether performed, by some small power from the steam-engine, or water works, which will presently be explained as being necessary for the proposed operations.

When a transfer of the whole has successively been effected, once more throw open the docks to the river, dismiss the vessels already passed the bridge, and receive others to repeat the operation; at low water again close the outward flood-gates, and proceed as upon the former occasion.

As the canal will naturally receive a considerable quantity of water by each discharge from the locks, there must be contrived and constructed a reservoir into which it can empty itself, on rising to a particular height; this reservoir, or several of them may perhaps be formed by excavating the ground under the wharfs along side, or in the cellars or vaults of the adjacent buildings, supporting the roof by small arches. Should there be a difficulty in purchasing such a mass of soil, the construction of these reservoirs at any distant spot would answer the purpose equally as well, provided there be a tunnel conducting to it from the canal, which may lead from the bridge up under the public street.

This reservoir whether near the docks, or at a distance, must be drained continually by a moderate steam-engine; the contents to be drawn up, so as to run off into the river, or to make the invention more complete, let one or two of the adjoining arches be provided with undershot water-wheels, similar to those which were very lately on the north end of the Old London Bridge, each furnished with a set of powerful pumps to perform that task.

Four men it is presumed will be fully adequate to work all the flood-gates, and give the necessary directions for the management of the respective vessels; to facilitate which, cards having printed instructions may be handed to each of the captains, to be returned after the passage.

Should it be required to increase the number of vessels allowed to pass at each ebb, and flow of the tide, even to double the number at some future period, when the new channels of trade become more extended above the bridges, then each dock may be lengthened, and divide into two, by a wall running from south to north, furnished with flood-gates: this would be an improvement in a double sense; for it would afford the means of opening the outward docks to deliver and receive shipping, while the inner docks might be at the same time in the operation of supplying the locks. In this case, however, the power of the steam-engine must be increased, and the number of dockmen augmented.

A variation of the plan might be made to have three small locks at each end of the canal as in fig. 3, for vessels to descend and ascend gradually as if by a flight of steps.

Each lock must be capable of holding three vessels abreast, but for the purpose of exchanging their contents with each other, it must be carefully arranged to fill them alternately, with two and three, in such a manner that when all the *a's* have three vessels each, all the *b's* must have but two, and *vice versâ;* and again to effectuate the transfers, each lock must be provided with two sluices at both ends, except the one near the bridge, where one will suffice.

This plan recommends itself, for occupying less space in the river, than the two above mentioned; a less quantity of water would be received into the canal, and it could

work (by having three falls) continually, whether the tide be high or low.

So long as the original and fundamental principle of having a sunken canal beneath an arch be adhered to, there are various methods by which the invention can be put in practise; the least expensive (should I not be mistaken) would be as in fig. 4, small locks *a, a*, being constructed on each side the bridge, each simply large enough to hold a vessel, so as only one might pass at a time, without a second meeting it, from the opposite side.

In the adoption of this plan, precautions must be taken to make the vessels descend and ascend in their passage alternately from each side the bridge; otherwise, there will be unnecessarily a double expenditure of water, into the lower canal.

Perhaps this minor plan may answer every purpose for a commencement, and should the steam-engine, or undershot wheel be sufficiently powerful to draw off the water from the canal, or even the lock itself, within any limited period, in which it may be intended to sink or lower the vessel, the reservoir itself, might be at first dispensed with, and only subsequently applied when deemed requisite.

As just now, the mid-channel *alone* above London bridge, is capable of receiving vessels when at low water, and these but of moderate burden, a greater depth might be obtained in two ways. The first method consists in employing steam engines fixed in floating barges, for working dridging or excavating apparatus, to draw up the soil; by the efficacious and powerful operations of this masterly modern invention, the whole river with perseverance might gradually be deepened, and rendered capable of floating vessels of any burden whatever, from shore to shore: and even as high as Chelsea, should this be seen

desirable in a mercantile point of view by enterprizing individuals, either now or here-after.

The second method is not only a more expeditious process, but much more simple; this would be to impede partially the ebbing of the tides, in throwing obstacles to their descent through London bridge, by placing flood gates at the western entrances of the arches, which could naturally on the other hand open of themselves, to admit the flood; and as they need not touch the bed of the river, (the expedient being merely recommended to be partial) could easily be applied, and that at a very small expence.

This plan of resisting the ebb tides, will depend solely upon the actual strength of London bridge; in particular as to its capability of standing against a great pressure of water; for with respect to those higher up the river, they would rather be strengthened than weakened by the project; how far the advantages acruing from the undertaking affording the former the required solidity, would remunerate the expences to be incured in the execution, (should there be any worth notice) is a question the solution of which must depend upon the opinion of professional and scientific gentlemen; certain however it is, the advantages would be great and manifold, by suddenly throwing open a new and spacious field for commercial navigation in the very heart of the metropolis itself: whilst the *greater depth and stillness of the current thus restrained*, would be more favourable for shipping to move from one station to another. Should this manner of acquiring more depth for anchorage be judged inadmissable, and that, by steam engines approved of, the effect of these again might be materially assisted, by contracting the shores of the Thames; this would confine the stream to a narrower compass, which, instead of being impeded as in

the former instance would naturally thereby on the contrary be accelerated, so as to be enabled to drive every loose substance before it, down the river; this improvement *would likewise afford the inhabitants of the capital an opportunity for ornament and utility, by creating two lines of projecting handsome quays, one on each side of the River, from London to Westminster bridges.*

As the proposed bridge-locks, on adoption, would principally be servicable to the colliers laden with coal for the west end of the town, hereafter those particular vessels could be constructed to the exact dimensions, as to length and breadth, as these docks, similar to the system adopted for barges on Canals; for in case their toll be fixed at one unvaried sum, without any regard to their tonnage (as it is evident this cannot make the smallest difference in the expenditure of water through the passage) it would be for the largest vessels, some small saving in expence.

The above dimensions likewise may be marked out by the engineer, so that those vessels being of a tolerable burden, and convenient in other respects, in case of any sudden war might readily be converted into transports, to be employed by government in the conveyance of troops and of warlike stores.

As the plan of acquiring a greater depth of water above the bridges, by restraining the descent of the ebb tides, as recommended, would undoubtedly be extremely detrimental to lighters, by increasing the danger of their passage through London Bridge, where I am informed there has been annually many lives lost, and much property destroyed by these unwieldy vessels striking against the projecting cumbersome starlings; one or two of the arches could be converted into secure locks, solely for their use; by which as heretofore instead of ascending and descending only as the tides ebb and flow,

and even that attended with imminent danger, they may for the future go up or down the river at pleasure, at all hours of the day, as circumstances should require with ease and perfect safety.

How far the improvements recommended for the port of London, in continually preserving a certain depth of water above London bridge, for shipping, by restraining the ebb tides, might affect the regular tides of the Thames, is a problem yet to solve; able engineers even at this early period of the business may give their opinions theoretically upon the subject, and subsequently, when the works are fully completed, the tide itself might be artificially regulated in some slight degree, by occasionally throwing open or closing the flood-gates, attached to the several arches of London Bridge, and a fine basin of water, hereafter invariably make its appearance, serviceable to trade, and gratifying to the view.

In the preceding argument, I have said little or nothing of the four bridges, above London bridge; convinced that should the apparent obstacles of the latter be overcome, all those of the former would easily be surmounted, and I now only beg to remark in respect to them, that on account of their various structures, and of the more moderate depths of these parts of the river, upon which they are severally situated, it may on examination be advisable, to erect the proposed works for the passage of the shipping, at their very centres.

This by the bye might have a better effect upon the eye, and will moreover strengthen the bridge itself considerably; besides, the centre arches of one or two of these bridges, are built upon so lofty a scale, that there may be no occasion for any sunken canal whatever; the docks being merely closed at low water, until the vessels have made their passage.

I have directed the flood-gates of the outward docks, to be closed at low water; this will not only require them to be of sufficient depth to float shipping at that period, but to be still deeper in proportion to the quantity of water they must lose by each discharge of the locks into the lower canal.

As making them so very deep, would naturally be attended with a greater expence, a calculation should be made previous to their formation to ascertain whether it would not be more advantageous (although I think to the contrary) to close the flood-gates at high water, and at the same time to increase in proportion, the draining power of the steam engine, or water works.

I remain,

Sir,

Your's, &c.

MONCRIEFFE WILLOUGHBY.

London, 10*th October*, 1828.

The author of the above paper is the projector of the patent balance keel, for shipping, which ingenious invention we have particularly described in our seventh volume, page 193, and plate XI.

Novel Inventions.

Self Generating Gas Lamp.

(Communicated by the Inventor to the Edinburgh Journal of Science.)

The oil vessel of this lamp is represented at *a*, Plate XI, Fig. 6, *b*, is the tube by which the oil is admitted, *c*, is the generator, *d*, is a hollow vessel, where the heat from the burners *f*, underneath, is collected, the dotted lines are projecting ridges on it, within the generator, to prevent the oil running down and collecting at the bottom of the generator, *e*, is a circular piece of iron to collect and retain the heat, *g*, are tubes to conduct the gas from *c*, to *f*; *l*, is a tube to supply the vacancy in *a*, with gas, as the oil is discharged into *c*; *h*, is a metal heater to fit into *d*.

To use the lamp, fill *a*, partially with oil, alcohol, or any fluid from which gas is produced, and having made the metal-heater *h*, red-hot, place it in the bulb *d*; after it has continued a minute or two, turn the stop-cock *i*, allowing the fluid to drop slowly on the heated bulb *d*, below, by which it will be converted into gas. When it is found to escape in sufficient quantities from the burners at *f*, set it on fire, remove the heater, and a beautiful bright flame will be supported by its own heat as long as there is oil in *a*.

It may be found necessary to replace the first heater by a second, when the lamp is used for the first time, to expel more effectually the atmospheric air from the generator

and tubes. The heat collected in *d*, will be found sufficient to generate gas to a third burner if required, as it is an indisputable fact, that most bodies in a state of combustion give out much more heat than is requisite to support an equal body of flame, and it is quite evident by fire spreading so rapidly in all combustible substances if not checked. X. X.

Description of a simple Punt-Boat for saving time and labour. By ANDREW WADDELL, Esq. F. R. S. E.

It is sixty feet long, sixteen feet broad, and four and a half feet deep. It carries its lading upon deck, and it is for the purpose of transporting stones, and other materials, for constructing wears, or breakwaters, and for removing obstructions in dry and bar harbours.

In the interior of the boat, below deck, there is a water-tight space, built on one side, occupying about one-third of the breadth of the boat, and the whole of the length, which space, has no connexion with any other part of the interior.

In the bottom of this space, there is an opening with a valve, to shut at pleasure, capable of admitting as much water in one minute, as will sink down that side of the boat, and raise the other: thereby forming an inclined plane, and admitting of the stones, or other material on the deck of the boat, sliding easily overboard into the water, after the manner in which a loaded cart is emptied.

The boat will then instantly resume, nearly, its upright position, and the valve being left open, the water that was admitted into the above mentioned space, will run out again to the level of the water without. The valve is then to be shut, and any water that remains in the said space,

tial to the production of the well-defined image necessary for the perfect use of the contrivance in geodesical operations.

This lime, when the experiment is most successful, emits a light exceeding 83 times that of the brightest part of the flame of an Argand lamp. In the focus of the parabolic reflector, at the distanse of 40 feet, it is almost too dazzling to look at.

From the perfect success which attended the employment of this mode of illumination, on one occasion in Ireland, last year, it is expected that it will enable the officers employed in the survey, to complete with celerity, and in the most satisfactory manner, the connection of distant stations. Lieut. Col. Colby purposes to connect, by means of this invention, the meridian of the observatory on the Calton Hill, at Edinburgh, with that of Dublin, taking Ben Lomond as an intermediate station; one side of the triangle in which operation will measure above 90 miles. Other applications of it are also contemplated.

Lieut. Drummond found that a mixture of hydrogen and chlorine gases, exposed to the light given out by the lime, was converted into muriatic acid; and that when the light was decomposed by a prism, the violet ray it contained had a marked effect on choleride of silver.

A note addressed to the author by M. Herschel was annexed to this paper, stating the results of a cursory optical examination of the light emitted by the incandescent lime. It contains all the usual rays, and three of them remarkable in quantity and quality: viz. a red, intermediate between the red and orange of the solar spectrum, but nearer to the latter: a yellow and a green. Mr. Herschel points out as a curious fact, that a red of the above character should be yielded by lime itself, whilst the colour given to burning bodies by the combinations of that

earth is a brick-red, very disiinet from the hue imparted by strontian, which is of a carmine tint.

May 11.—Sir J. S. Copley, His Majesty's Attorney-General, and L. A. De la Chaumette, were admitted Fellows of the Society: A paper was read, On the Production and Formation of Pearls; by Sir E. Home, Bart. VPRS. It is stated, in this communication, that pearls originate in the blighted ova of the shell-fish that produce them, and that they afterwards receive a coat of naker, when the interior of the shell receives its annual supply.

The reading was commenced of a paper, On the Burrowing and Boring Marine Animals; by Edward Osler, Esq.; communicated by L. W. Dillwyn, Esq. FRS.; and the Society then adjourned to the 25th of May.

May 25.—The Right Hon. Sturges Bourne, and Dr. A. P. Wilson Philip, were admitted Fellows of the Society; and the reading of Mr. Osler's paper, On the Burrowing and Boring Marine Animals, was concluded.

In this paper, the operations and mechanism of burrowing and boring, as practised by various marine animals, belonging to the classes *Mollusca* and *Annelides*, are first munitely described. Facts are then adduced strongly to prove, that the *Lithophagi* effect their perforations, not by mechanical means, but by a solvent fluid, which, however, being secreted only when required for use by the animal, the author has not been able to detect by chemical tests. These animals perforate calcareous stone, and shell, but their progress is stopped by siliceous or argillaceous matter, on which they are unable to act; thus a thin layer of clay occuring in a rock which they are perforating, forms to them an impassible obstacle. Another important fact related in this paper, having the same bearing, is as follows:—The *Saxicavæ* often exert their

boring powers on the shells of contiguous individuals of their own species; and so long as they have not penetrated through them, no notice is taken of it by the animals attacked; but when the perforation is complete, or nearly so, the aperture is immediately filled up, not with shell, but with a yellow animal substance, insoluble even in the mineral acids.

June 1.—The following papers were read:—

An account of some Experiments relative to the Passage of Radiant Heat through Glass Screens; by the Rev. Baden Powell, MA. FRS.

The object of this paper was to examine a question arising from De la Roche's experiments, as to a particular case in which the experimenter supposed there must be a direct transmission of simple radiant heat through glass. This case is that of a second glass screen interposed between a first and a thermometer, when M. De la Roche found the additional dimunition much less in proportion, than that occasioned by the first screen on the total effect. He hence supposed the heat to have acquired a property analogous to polarization, by which it was enabled to penetrate the second screen without loss.

The experiments here detailed were designed to examine, first, whether this effect could be verified; and secondly, whether, if so, it could be accounted for, without introducing any new or peculiar property of heat. The results shew that the fact is completely verified, and at the same time the peculiar explanation rendered unnecessary; as from observing the temperatures acquired by the screens, it appeared that the effect was exactly such as would be accounted for from the simple circumstance of a secondary radiation from the screen,

In the sequel of the paper the recent experiments of

Mr. Ritchie were adverted to, who has maintained that simple heat radiates directly through very thin glass when transparent, but not when opaque. This result was tried by a different method from Mr. R.'s and no difference was found to be occasioned by the transparancy of such a screen.

Thus two apparent exceptions to the general law "that simple heat cannot permeate glass," are done away.

An Account of a Telescope having only one Reflector, and of easy Management in observing; by the Rev. Abram Robertson, DD. FRS.

Account of some Experiments on the Laws of Electrical Accumulations on coated Surfaces; On the Construction and Use of a Magnetic Balance; and On the Electrical Conducting Power of various Metallic Substances; all by W. S. Harris, Esq.: communicated by the President.

June 8.—The Bakerian Lecture; On the Relations of Electrical and Chemical Changes; by Sir H. Davy, Bart. PRS. was read.

The experimental investigations and results brought forward in this Lecture, are prefaced by a historical sketch of the origin and progress of electro-chemical science, with a view of correcting the erroneous statements that have appeared on the subject. The origin of this branch of knowledge is stated to be the discovery of the decomposition of water by the voltaic pile, by Messrs. Nicholson and Carlisle in 1800. This was followed by the experiments of Cruickshank and of Dr. Henry, and by several papers by the author himself, the chief contents of which are stated, and in which the appearances of acids, and oxygen, at the positive, and of alkalies, sulphur, and metals, at the negative pole, were described.

The experiments of Hisinger and Berzelius, in 1804, are

placed next in order, which establish similar results; and in 1806, on the occasion of the agitation of the question respecting the production of muriatic acid and fixed alkali from pure water, the author presented to the Royal Society his Bakerian Lecture on the Chemical Agencies of Electricity, in which he drew the general conclusion that the combinations and decompositions by electricity, were referrible to the law of electrical attractions and repulsions—a theory in which he observes, he has hitherto found nothing to alter, and which, after a lapse of 20 years, has continued, as it was in the beginning, the guide and foundation of all his researches. The instruments used in the experiments of the present paper for detecting and estimating electric currents of low intensity, were constructed on the principles of the multiplier of Prof. Schweigger, and the galvanometer of Prof. Cumming. For determining weak electricities of tension, Volta's condenser, connected with Bennet's electrometer, or with one consisting of a silk filiament rendered conducting by charcoal dust, was employed. Much dependence was, however, never placed on these instruments, unless their indications were otherwise confirmed.

The author now proceeds to the experimental inquiries which form the chief object of his lecture, and to the general views of electro-chemical agency to which they appear to lead. And first, he considers the electrical and chemical effects exhibited by combinations of one metal and one fluid: the nature of these effects is best explained by an example. When two pieces of polished copper connected with one extremity of the wire of the multiplier, are plunged into a solution of an alkaline hydrosulphuret, if introduced at the same instant, there is no action; but if in succession, a sensible interval being allowed to elapse, there is a distinct or even a violent electrical effect,

and the piece of metal first introduced is negative with respect to the other; this effect depends on the formation of a coat of sulphuret of copper *on* the plate first introduced, while it is negative with respect to metallic copper. Hence the combination is in strictness one of three elements: copper, sulphuret of copper, and the solution. In like manner, protoxide of copper is negative with respect to pure copper, and to the sulphuret.

The production of electrical currents by single metals and single fluids occurs generally whenever new products adhering to the metallic surfaces are produced; and if the same products be applied artificially, the effects are the same, as if the adhesion had been caused by the natural action of the fluid on the metal. The chemical changes produced in the fluid by the ternary combinations thus formed, are in all cases, such as tend to restore the deranged equilibrium, hydrogen passing to the negative side, and oxygen to the positive, until the oxides are revived.

The case of two imperfect and one perfect conductor is next considered as two fluids and a metal or charcoal. Here the author controverts an opinion advanced on high authority, respecting the alleged development of electricity on the combination of acids and alkalies, which he refers to the contact of metals with these agents, to change of temperature, evaporation, &c. and never to the mere union of these bodies; several experiments are adduced in support of this opinion.

When platinum is brought into contact with an acid, the pole touching the acid is negative, the opposite pole positive, and *vice versâ* where it touches an alkali; and the same is the case with rhodium, iridium, and gold; the effect being greater as the action of the acid on the metal is greater. From this it follows, that when a metal is in

contact with an acid or alkali in one cup, and water or a neutro-saline solution in another, on completing the circuit, the contact of the metal with the acid or alkali will determine the character of the pole in contact with it, and that in contact with the other fluid will of course be of the opposite name, and this result is confirmed by experiment. In such combinations, the chemical changes are such as might be expected; oxygen and the acids tending to circulate towards the negative surface, and hydrogen and the alkalies towards the positive.

In combinations consisting of two perfect conductors and one fluid, the order in which the metals exhibit their electricities is connected with their oxidability, the more oxidable metal being positive with respect to all below it. It is not, however, any inherent quality in the metals which determines this effect, but their fitness for chemical action; for if the state of aggregation be altered, and the cohesive force, which always acts as an antagonist force to chemical changes, be weakened, the positive energy is exalted in proportion: thus the amalgams of the positive metals are positive with the respect to the pure metals of which they are amalgams. In general, the electricities developed by metallic contact are too strong to be subverted by an opposite action with the fluids with which both are in contact. Such, however, is sometimes the case; and in all instances, the influence of the fluid is perceptible.

The author next considers the accumulation of electricity, and the chemical changes it produces in voltaic arrangements. According to Volta's view of the action of the pile, the metals were regarded as the only agents, and the chemical changes arising in the fluids as mere results not essential to the developement of the electricity. This view, however, may be regarded as altogether disproved by

an experiment here described, in which when two glasses filled with solution of nitrate of potash, in which were plunged respectively zinc and platinum connected by the multiplier, were connected by substances capable of conducting electricity, but not of propagating chemical action, such as unoxidable metals, the circulation of the current was altogether destroyed.

Since the chemical changes always tend to restore the equilibrium, destroyed by the contact of the metals, in the fluids of a pile, it is evident that the relation between the fluids themselves and the surfaces with which they are in contact, will be altered by a continuance of the action of the pile. Hence it is easy to perceive the possibility of a re-action taking place when the circuit is broken, or the disposition of the parts of a pile is changed, or one or more parts of a compound circuit abstracted. Many curious phænomena of which hitherto no explanation has been offered, may be explained by this view of the subject: such as the secondary piles of M. Ritter—the supposed polarization of electricity, concluded by M. de la Rive from his experiments on the interposition of metallic plates in the fluids of a pile—and the continuance of electro-motive action of detached portions of a circuit, after the destruction of the circuit itself. This *re-action* is illustrated in the present paper by an experiment, in which a circuit primarily inactive, consisting of six arcs of platinum in vessels filled with solution of nitre, was made part of a battery consisting of 50 pairs of plates of a combination primarily active. After continuing the circuit some time, it was broken, and the platinum arcs, detached and formed into a circuit, were found to possess independent action, contrary to that of the pile, which had thus rendered them re-active.

This singular consequence is pursued yet further in another experiment here stated, in which detached por-

tions of a battery of 50 plates which had been some time in action, were examined as separate piles, after breaking up the combination. When they had been placed *conformably* in the original battery, their independent action was found to be very much weakened by the re-action thus produced, which in this case opposed their natural effect; whereas, when *unconformably* placed in the original battery, their action when detached was found exalted to three or four times its natural intensity.

The author next proceeds to point out some general observations and practical applications which suggest themselves on a view of the foregoing results. The chemical changes in a conducting liquid, he first shows, take place only in the immediate vicinity of the immersed poles, the rest of the liquid affording only a tranquil passage to the electricity. This leads him to consider the motions produced to mercury when interposed in the circuit under an electrified fluid, which he regards as arising from the two electricities, acting as transporters of ponderable matters which assume their own peculiar characters when they reach their point of rest. The lecture concludes with some suggestions as to the use of the multiplier to obtain exact numerical measures of the electro-dynamic relations of chemical elements; and with some applications of the preceding results to the useful arts, especially in the preservation of the copper on ships, and of the iron boilers of steam-engines.

A paper was also read, On the Discordances between the Sun's observed aud computed Right Ascensions as determined at the Blackman-street Observatory; by James South, Esq. FRS.

June 15.—Sir G. Nayler, Knt. Garter King at Arms, was admitted a Fellow of the Society; and the following papers were read, aud their reception announced:

Observations on a Case of Restoration of Vision; by James Wardrop, Esq.; communicated by the President.

In this paper is described the operation of forming an artificial pupil, by which sight was given to one eye of a lady, forty-six years of age, who had been blind from infancy. The globe of the other eye was collapsed. The phænomena ensuing, in the gradual acquisition of the various discriminations of sight, agreed with those detailed in similar cases by Cheselden, and others.

On the Existence of a Limit to Vaporization: by M. Faraday, Esq. FRS.

On Electric and Magnetic Rotations: by Charles Babbage, Esq. MA. FRS.

On the Progressive Compression of Water by High Degrees of Force, with some Trials of its Effects on other Fluids; by Jacob Perkins, Esq.: communicated by W. H. Wollaston, MD. VPRS.

In this paper Mr. Perkins first describes in detail, with the aid of illustrative drawings, the apparatus for experiments on the compression of water, suggested by him in his paper on the subject, published in the Philosophical Transactions for 1820. He then briefly relates some of the experiments performed by its means, refering to a plate annexed representing by a curve, the law of condensation under pressures of from 10 to 1000 atmospheres, and also to a table showing the results numerically. In one experiment, the water was compressed one-twelfth of its volume, by a pressure of 2000 atmospheres. Some experiments on other liquids, and on aeriform fluids, are also adverted to; among the former, acetic acid was crystallized, and among the latter atmospheric air and carburetted hydrogen gas were liquefied, by the same apparatus.

On the Figure of the Earth; by G. B. Airy, Esq. MA.: communicated by the President.

Observations for determining the Amount of Atmospheric Refraction at Port Bowen; by Capt. W. E. Parry, FRS.; Lieut. H. Foster, FRS.; and Lieut. Ross.

On the Crystallization of Uric Acid; by Sir Everard Home, Bart. VPRS.

Microscopical Observations on the Muscular Fibre of the Elephant; by H. Mayo, Esq.: in a letter to Sir E. Home.

The reception of papers, on some phœnomena in magnetism, and on a shell exploded by percussion, by Mr. Christie and Col. Millar respectively, was also announced; and the Society then adjourned over the long vacation, to meet again on Thursday, the 16th of November next.

Ann. of Phil.

Society of Arts.

Our limits will not allow us to resume the reports of this Society's proceedings. We shall continue them in our next.

French Patents, 1826.

SECOND QUARTER.

To Berthol and Mariot, Chalons-sur-Saone, for improvements and additions to their patent of invention for the construction of roofs, ceilings, &c. 10th February—15 years.

— P. Badeigts de Laborde, Saubuse, Dept. Landis, for an addition and improvement to his invention of an apparatus to manufacture essence of Thurbentine. 6th August—10 years.

— Paturle, Lupin and Co, and C. A. Seydoux, Paris, rue Lepellitier, for improvements and additions to the patent of invention, for a machine called " Vaudoise," to comb wool. 7th April—15 years.

To F. Favre, Nantes, Department inferior Loire, for his invention of unalterable printing or calender rollers. 7th April—5 years.
— Madame Breton, Paris, for an improvement in nursing-tips. 30th June—5 years.
— P. Masnyac, Lyons, Department Rhone, for improvements and additions to the patent of invention for manufacturing hats with feathers. 12th August 1824—5 years.
— M. Jongh, Warrington, England, for his importation of machinery to spin wool. 7th April—15 years.
— J. F. H. Lamorineire, Paris, for improvements and additions to the invention to manufacture bricks, tiles, &c. 21st September 1825—10 years.
— J. C. Cloue, Paris, for his invention and improvements to Lithographic presses. 24th April—5 years.
— Joanne Brothers, Mauzin and Lewnite, Dijon, Department Cote d'Or, for improvements and additions to the invention for machinery to drive boats up rivers. 8th December 1825—15 years.
— J. G. Decaudin, Paris, for his invention of machinery to manufacture fringes. 24th April—10 years.
— Madame Renaud Bainville, Givannis, Department Ardennes, for her invention of a machine called "Pluseuse," to clean wool. 24th April—5 years.
— L. Dumery, Paris, for his invention of an improved water-wheel. 24th April—5 years.
— P. A. Frichot, Paris, for his invention and improvement, in the construction of rolling-mills, for the manufacturing of steel perles. 24th April—5 years.
— Fleishinger, Paris, for his invention of a machine to grind colours in a dry state. 24th April—5 years.
— J. Collier, Paris, for improvements and additions to his patent of importation for a power-loom to weave woollen cloths. 31st December, 1823—15 years.
— J. F. Marchand, Paris, for his invention of a cutter for washers and nuts to bolts. 24th April—5 years.
— J. C. Virton-Huet, Paris, for his invention of corn-batting-machines. 24th April—5 years.
— P. Deservisilles, Rouen, Department Siene-inferieure, for his invention of an apparatus to singe stuffs. 28th April—15 years.
— A. T. Ganoel, Rouen, Department Seine-inferieure, for his invention of a machine economically to wash the wool. 28th April—5 years.
— Englorth, Realeaux and Dobbe, Eschweiter, Department Ardennes, for their importation and improvement of a fulling-mill. 28th April—5 years.

To B. Rotch, London, for his importation of a process to spin and twist silk. 28th April—15 years.

— E. Delcambre, Paris, for his invention of a mechanical process to sift mineral or vegetable substances. 5th May—15 years.

— I. Garnier, Isle of Olivon, Department Charente-inferieure, for his invention of a distilling apparatus. 3rd May—10 years.

— G. M. Chumette, Lyons, Department Rhone, for his invention of balancing ink-stands. 5th May—10 years.

— Chalmas and Barret, Lyons, Department Rhone, for their invention of a carriage with three wheels. 5th May—15 years.

— A. Douet, Junr. Tour, Department Indre et Loire, for his invention of a paste "vennicelli," he calls "analeptique." the May—5 years.

— I. Christofle, Paris, for his invention to manufacture metallic buttons. 5th May—5 years.

— L. G. Brocot, Paris, for his invention of a clock motion, with escapement, &c. 5th May—5 years.

— J. Haywood, Weymouth, England, for his invention and importation of a steam apparatus to boil liquids. 5th May—5 years.

— J. P. Dupon, Paris, for his invention of a chimney he calls "Gazofumivore." 3rd May—15 years.

— M. Lorillard, Nuits, Department Cote d'Or, for his invention of a machine to bore holes in planks and receive empty bottles. 5th May—5 years.

— J. Heathcoat, Tiverton, England, for improvements and additions to his patent of importation for moving the bobbins in the bobbin-net machine. 14th September 1825—15 years.

— C. I. Andrieu, Paris, for his invention of a certain machine to be set in motion by certain gas instead of vapour steam. 5th May—15 years.

— J. G. Ulrich, London, for his importation and improvements in the construction of chronometers. 5th May—15 years.

— J. Despiau, Senr. Bourdeaux, Department Gironde, for his invention of a machine to batt, open and clean wool. 12th May —10 years.

— J. M. Hanchett, and H. G. Smith, Paris, for improvements and additions to their patent of importation for an apparatus to compress gas. 1st July 1824—15 years.

— De Lamortiziere, Paris, for improvements and additions to his patent for a machine to drive boats up rivers. 17th March—10 years.

— A. J. P. Thilorier, Paris, for his invention of a lamp he calls, "hydrostatic." 12th May—5 years.

— F. Rouard, Paris, for improvements and additions to his patent of invention for manufacturing of tiles to cover houses. 3rd March—5 years.

To P. N. Tassemain, Sweaches, Department Eure et Loir, for his invention of a machine to cut the corn in the field. 12th May —15 years.

— T. H. Pape, Paris, for his improvements in the construction of Piano-fortes. 12th May—10 years.

— Madame Regnauld, Paris, for her invention of a "pictoral paste." 19th May—15 years.

— Norbert Rillieux, Paris, for his invention to obtain hydrogen carbonic gas, at different degrees of pressure. 19th May—10 years.

— J. B. D. Perot, Paris, for his invention of a process and means to mark the points at card playing, or other games. 19th May —5 years.

— C. Guigo, Lyons, Department Rhone, for his invention of a machine to weave, &c. 19th May—10 years.

— P. M. Daulle, and L. J. Cordier, Paris, for their importation of a machine to prepare wool, silk, &c. 19th May—5 years.

— P. Tremblot Lacroix, Paris, for his invention of a machine, he calls "compositor typographic." 2nd June—5 years.

— J. J. Burle, Paris, for his invention of a composition of platine. 2nd June—5 years.

— H. Langlois, Paris, for his invention of a cock applicable to machines containing gas. 2nd June—5 years.

— P. Tespar, Paris, for his invention and improvement of an apparatus he calls "Fumivore vaporator et condenzator." 2nd June —10 years.

— Fehr, et Vic-dezsos, Department Arriege, for his invention of vessels or pots to manufacture mineral, vegetable, or animal coal. 2nd June—10 years.

— G. W. Walker, Lorint, for his invention of a loco-motive carriage. 2nd June—10 years.

— A. Christofle, Junr. Paris, for his importation and improvement in the manufacturing of buttons from tortoise-shell, bone, &c. 2nd June—5 years.

— J. Rocher, Paris, for his invention of a wheel to regularise the emission of portable gas. 2nd June—15 years.

— Maillard-Durneite, Paris, for his invention of a cylindrical distilling apparatus. 2nd June—10 years.

— P. Raviers, Paris, for his invention and improvements of a composition he calls "ladies coffee." 2nd June—10 years.

— J. D. Fisher, Paris, for his invention, importation and improvement of a set of machinery, to card, prepare, and spin wool, and other fibrous materials. 9th June—15 years.

— M. J. A. Comoy, Nevers, Department Nievre, for his invention of a new wine press. 9th June—5 years.

— P. E. Kinkelin, Paris, for his invention of a process to anchor boats on navigable rivers. 9th June—5 years.

To A. Dutertre, Paris, for his invention of a new instrument to the use of sight. 9th June—15 years.

— De Bugury, and Bernhardt, Paris, for their invention and importation of a certain process to produce artificial leather. 16th June—10 years.

— Baroness de Gavedell-Geanny, Paris, for her importation and improvement of manufacturing bricks by machinery. 16 June—15 years.

— V. L. Simonard, Lyons, Department Rhone, for his addition and improvement to his patent for a mechanical process of driving boats up the river by the current. 21st Dec. 1825—15 years

— G. Hunter, Paris, for his invention ot a carriage carrying its own Iron rail road. 16th June—15 years.

— P. Fouquier, Roubaix, for his invention of a manufacturing weaver combs of steel. 16th June—5 years.

— J. B. V. Buisson, Paris, for his invention of a process of bleaching and washing linen by steam. 16th June—10 years.

— B. Laboyer de St. Gervaix, Paris, for his invention of a machine he calls "Voltige." 16 June—10 years.

— C. P. Antheaum, Rouen, Department Seine inferieure, for his invention to sew mechanically shoulder straps, &c. 26th June—5 years.

— L. Baron, Nimes, Department Gard, for his improvement and addition to his patent of invention for a distilling apparatus. 23rd June—5 years.

— H. Brugniere, Nines, Department Gard, for his invention of improvements to M. Derosnes distilling apparatus. 23rd June—5 years.

— P. Daste, Condon, Department Gers, for his invention of a machine to grind corn. 23rd June—5 years.

— P. Vital, Paris, for his invention of a process to learn to write in a short time. 23rd June—5 years.

— A. N. Lithomond, Paris, for his invention of a process to manufacture artificial marble, stone, and ornaments thereof. 23rd June—15 year.

— M. Poole, London, for his invention to tan leather by the compression of the atmosphere. 23rd June—15 years.

— J. Hayward, Paris, for his invention of a new apparatus to filter and clarify syrups, &c. 23rd June—5 years.

— E. Fessart, Paris, for his invention of a tool to clean bottles. 30th June—10 years.

— J. Suttil, London, for his importation of a set of machinery to spin hemp, flax, &c. 30th June—15 years.

— A. Brouguiers, La rochelle, Department Chareote inferieure, for his improvement and additions to his patent for a distilling apparatus. 11th December 1817—10 years.

New Patents Sealed 1826.

To John Riste, of Chard, in the county of Somerset, lace manufacturer, for his invention of certain improvements in machinery for making net commonly called bobbin or twist net—Sealed 4th October—2 months.

To Francis Halliday, of Ham, in the county of Surrey, Esq. for his invention of certain improvements on apparatus used in drawing boots on and off—4th October—6 months.

To Theodore Jones, of Coleman street, in the city of London, accountant, for his having found out and invented improvements on wheels for Carriages—11th October—6 months.

To William Mills, of Hazelhouse, in the parish of Bisley, in the county of Gloucester, gentleman, for his invention of improvements in fire-arms—18th October—6 months.

To William Church, of Birmingham, in the county of Warwick, Esq. for his invention of certain improvements in printing—18th October—6 months.

To Samuel Pratt, of New Bond street, in the parish of St. George Hanover square, in the city of Westminster, camp equipage manufacturer, in consequence of a communication from a Foreigner, resident abroad, and discoveries by himself, for an invention of certain improvements on beds, bedsteads, couches, seats, and other articles of furniture—18th October—6 months.

To William Busk, of Broad street, in the city of London Esq. for his invention of certain improvements in propelling boats and ships, or other vessels or floating bodies—18th October—6 months.

To James Viney, of Shanklen, in the Isle of Wight, Colonel in our Royal Artillery, and George Pocock, of Bristol, gentleman, for their invention of certain improvements in the construction of cars and other carriages, and the application of a power hitherto unused for that purpose to draw the same, which power is also applicable to the drawing of ships, and other vessels, and for raising weights, and for other useful purposes—18th October—6 months.

METEOROLOGICAL JOURNAL, September and October 1826.

1826.	Thermo.		Barometer.		Wind.	Weather.
	Max	Min.	Morn.	Even.		
Sept.						
26	71	50	29,63	29,69	S.	Rain 7-16 inch
27	69	59	29,67	29,86	W.	Ditto 13·16 inch
28	69	58	29,94	29,97	W.	Fair—Sun—clouds
29	68	54	29,94	29,77	S. W.	Ditto—cloudy—misty
30	70	57	29,60	29,66	S. W.—W.	Ditto—ditto
Oct.						
1	66	52	29,66	29,70	W. S.—N. W.	Rain $\frac{1}{4}$—cloudy
2	64	47	29,70	29,75	S. W.	Fair—cloudy
3	63	50	29,74	29,71	N. W.	Ditto—ditto
4	54	46	29,62	29,63	N. W.—N.	Cloudy
5	55	44	29,64	29,77	N. W.—N.	Fair—hail storm
6	53	38	29,84	29,94	N.	Do—Frosty morning
7	58	44	29,90	29,82	S. W.—W.	Cloudy—slight showers
8	60	53	29,74	29,60	W.	Rain $\frac{1}{8}$ inch
9	57	45	29,63	29,63	N.—W.	Cloudy—shower—hail
10	61	48	29,53	29,68	W.	Rain $\frac{1}{2}$ inch
11	66	56	29,84	29,86	W.	Sun—cloudy—slight showers
12	63	58	29,89	29,84	W.—S. W.	Cloudy—damp
13	67	44	29,82	30,02	N.—N. W	Do—slight showers
14	55	40	30,02	29,93	N.—S. W.	Cloudy—fog
15	63	53	29,79	29,57	S. E.—S.	Ditto
16	65	48	29,50	29,67	S.—S. W.—W.	Ditto—slight showers
17	58	44	29,81	29,81	S. W.	Sun and clouds
18	60	44	29,82	29,85	S.—S. E.	Cloudy—damp
19	60	54	29,85	29,84	S.	Ditto—ditto
20	60	55	29,83	29,80	S.—S. E.	Ditto—ditto
21	66	56	29,81	29,82	S·—S. W.	Fair—clear
22	60	56	29,80	29,76	S.—W.	Thunder and rain $1\frac{5}{8}$ in.
23	63	56	29,75	29,76	S.	Ditto—cloudy—slight showers
24	61	54	29,76	29.60	S.	Sun and clouds—damp
25	57	48	29,29	29,29	S. W.—W.	Rain $\frac{3}{8}$ in.—sun and wind

Hitchen, Herts. WATSON PERKS.

D.	H.	M.	S.	
1	3	0	0	☽ in conj. with 1 β in Scorpio
1	3	0	0	☽ in conj. with 2 β in Scorpio
1	5	0	0	☽ in conj. with γ in Scorpio
2	7	0	0	☽ in conj. with ρ in Oph.
3	3	0	0	☽ in conj. with 1 μ in Sagitt.
3	4	0	0	☽ in conj. with 2 μ in Sagitt.
4	0	0	0	☉ before the Clock 16′ 15″.
4	5	0	0	☽ in conj. with δ in Sagitt.
5	8	0	0	☽ in conj. with β in Capri.
6	5	25	0	☽ in □ first quarter.
6	16	0	0	♂ in conj. with ♅ long 20° in Capri. ♂ lat. 1° 44′ S. ♅ lat. 30′ S. diff. lat. 1° 14′.
7	12	0	0	☿ in conj. with δ in Scorpio
14	0	0	0	☽ Eclipsed partly visible
	2	15	30	Beginning
	4	11	15	Middle
	6	6	45	End
14	4	9	0	Ecliptic Opposition or ● Full Moon.
15	0	0	0	☉ before the Clock 15′ 14″.
16	2	0	0	☾ in conj. with ι in Taurus.
16	18	0	0	☾ in conj. with ζ in Taurus.
18	19	0	0	☾ in conj. with γ in Gemini.
19	20	0	0	☿ in conj. with A in Oph.
20	0	0	0	☉ before the Clock 14′ 13″.
20	18	0	0	☾ in conj. with 1 α in Cancer.
20	19	0	0	☾ in conj. with 2 α in Cancer.
21	0	0	0	☿ in conj. with a in Oph.
21	19	0	0	☿ in conj. with B in Oph.
22	5	59	0	☾ in □ last quarter.
22	7	13	0	☉ enters Sagitt.
25	0	0	0	☉ before the Clock 12′ 51″.
26	6	0	0	☾ in conj. with α in Virgo.
26	0	0	0	☾ in conj. with ι in Virgo.
28	0	0	0	☉ Eclipsed visible
	21	59	0	Beginning
	23	5	15	Middle
29	0	11	30	End
28	6	0	0	☾ in conj. with κ in Libra.
28	10	0	0	☽ in conj. with λ in Libra.
28	23	37	0	Ecliptic conj. or ● New Moon.
29	15	48	24	♃'s 1st Satt. will immerge
29	18	0	0	☽ in conj. with ρ in Oph.
30	0	0	0	☉ before the Clock 11′ 10″
30	14	0	0	☽ in conj. with 1 μ in Sag.
30	14	0	0	☽ in conj. with 2 μ in Sag.

The waxing ☽ moon—the waning moon ☾

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, September and October, 1826.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low.			Hig.	Low.	High.	Low	
Sept.						Oct.					
26	70	49	29,80	29,68	,2	11	66	50	29,94	29,87	
27	69	56	29,98	29,74	,4	12	65	55	29,96	29,94	,05
28	69	54	30,05	30,00		13	63	50	30,06	29,99	,2
29	74	49	30,05	29,80		14	60	37	30,08	30,05	
30	70	52	29,70	stat.	,025	15	65	48	29,84	29,63	,075
Oct.						16	64	45	29,68	29,50	
1	65	48	29,70	stat		17	58	32	29,86	stat.	,1
2	63	39	29,84	29,81	,1	18	62	37	29,95	29,80	,025
3	62	42	29,83	29,80		19	66	51	29,96	29,95	
4	58	42	29,68	29,67	,425	20	68	55	29,86	29,85	
5	51	3·25	29,70	29,68		21	68	52	29,88	29,86	
6	52	28	30,00	29,96		22	63	47	29,84	29,82	
7	60	27	30,00	29,92		23	63	53	29,77	29,76	,1
8	60	52	29,84	29,75	,025	24	60	45	29,82	29,50	,75
9	52	40	29,67	stat.	,2	25	54	49	29,36	29,30	
10	62	38	29,60	29,55	,4						

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. of Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

The Hon. George Keppel, (son of the Earl of Albermarle) is preparing for publication his Personal Narrative of a Journey from India to England, by Bu-sorah, Bagdad, the ruins of Babylon, Curdistan, Persia, and Russia in the year 1824.

It is said that two Pictures, by Vander Meulen, the celebrated Flemish painter, representing the taking of Lisle and of Cambray, by Louis the Fourteenth, have lately been purchased at Amsterdam for the Pacha of Egypt.

ARMOUR IN THE TOWER.—It appears from a letter of Dr. Meyrick's inserted in the last No. of the Gentleman's Magazine, that he is employed only in arranging the Horse Armoury chronologically, in a new building alotted for that purpose. Mr. Wright has "renewed" the Spanish Armoury. In the rear of the Equestrian figures in Armour, variously disposed, Dr. M. has placed a number of fine cannon from the time of Henry VI. to James II. and he states, that with the exception of one suit of Mail, fashioned to resemble the time of Edward I. the whole are genuine or "founded on the basis of truth." Many royal and noble badges have been discovered on these arms.

A volume of Mathematical and Astronomical Tables, for the use of Students in Mathematics, Surveyors, Engineers, Navigators, &c. by William Galbraith, M. A. Teacher in Edinburgh is nearly ready for publication.

FRENCH CANALS.—The execution of a projected Canal, to unite the Rhine and the Seine is at present the object of contest between two Companies; the one under the direction of M. Brisson, the other of M. Albert.

FINE ARTS.—It is with considerable pleasure we state that the National Gallery has received the following splendid addition:—

The Governors of the British Institution have presented to the Nation, three most valuable pictures, viz. the Vision of St. Jerome, by Parmegiano, bought at Mr. W. Taylor's sale for 3100 Guineas —the Communion of St. Nicholas, by Paul Veronese, purchased by the Directors at 1500 Guineas, and West's Picture of Christ Healing the Sick, for which they paid him 3000 Guineas.

These noble productions are now being arranged in the National Gallery; and the Collection thus superbly increased will be opened for public inspection the first Monday in November.

M. Malte-Brun's sixth Volume of Geographie Universelle, has lately been published in Paris—it embraces Turkey in Europe, Greece, Hungary, Poland, and those Parts of the Russian Empire, which lie in Europe.

HEBREW LITERATURE.—The Society formed in Amsterdam for the cultivation and advancement of the Hebrew Language and literature, continues its researches and its publications with perseverance and success. The different numbers which have been published of the proceedings of this Society are full of poetry and of philosophical dissertations, distinguished by pure, correct, and elegant Hebrew, and by a profound knowledge of Jewish Antiquities.

Mr. John Farey's Historical, Practical and Descriptive Treatise on the Steam-engine, is announced to appear in December, illustrated by numerous engravings by the late Mr. John Lowry. The object of the work is stated to be, 1st—To form a complete History of the invention from its origin to its present state of perfection shewing to the statesman and political economist the influence that the adoption of steam-powers has exercised upon our national prosterity and advancement during a century past, and the prospect of future advantages to be expected from more extended application of the same principles, 2nd—To form a correct guide for the instruction of professional students in the practice and theory of making and using Steam-engines, 3rd—To form a manual which will falicitate the practice of the experienced professional engineer, and 4th. To contain a record and brief explanation of all the speculative projects which have been proposed for the improvements of Steam-engines.

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No. LXXIV.

Recent Patents.

To Nicholas Hegesippe Maniclor, *of Great Guildford Street, Southwark, in the County of Surrey, Chemist, for his Invention of a new Preparation of Fatty Substances, and the application thereof to the purposes of affording Light.*

[Sealed 20th March, 1826.]

This invention is a peculiar method of operating upon tallow, for the purpose of refining or purifying it, and which when made into candles, affords a much more beautiful light, than any other material hitherto used for that purpose.

The patentee proposes to take raw fat, say about four hundred weight, and to boil it, with about fifteen gallons of water, in a close vessel. A valve opening outwards, is to be inserted in the top of the boiler, and loaded, so as to resist an internal force of about fourteen pounds upon

every square inch, that is a pressure of one atmosphere. The tallow having been boiled in this vessel for the space of about six hours, is then to be poured off and cooled to about 90 Farh. when it is to be spread out in layers, not exceeding half an inch in thickness, upon woollen cloths of close texture, or upon felts, all of the same size.

On the tallow becoming hard each layer is to be folded up, by turning over the corners of its cloth or felt. These parcels are then to be piled one upon another, and pressed by a weight equal to about half a ton, placed upon the top of the pile. At the expiration of about one hour, an additional weight is to be applied, making the pressure now about one ton; and in two hours time, this weight is to be augmented to a ton and a half, in which state it is to remain for at least four hours, in a temperature of about 80°.

The packets may now be removed, and the edges of the tallow pared round, in order to take off those parts which have been imperfectly pressed; the cuttings from the edges are then to be placed on the middles of the cakes, and the whole packed up in the cloths or felts as before, and piled upon each other under an hydraulic press, which is to be progressively increased in force, so as to express all the remaining oily matter gradually out of the tallow.

The cakes are not to be removed from their envelope, and having become extremely brittle by the pressure, are to be broken up and re-melted in a vessel heated by steam, and to be incorporated with bees' wax or prepared linseed oil; the proportional quantities of these materials are to be about one hundred weight of fat to twenty pounds of wax, which must be of the purest fine white quality; if linseed oil be preferred it must have been previously concentrated by boiling, and brought to

the consistency of turpentine, and then mixed in the proportion of ten pounds of the prepared oil to one hundred weight of the fat; but these proportions will depend upon the quality of the fat and of the oil.

The proposed method of preparing the oil, is by heating it in an open vessel until it gives out an inflammable vapour. The gas evolved is then to be burnt as it rises, until the quantity of the oil becomes reduced to two thirds of its original volume; it is then to be exposed to the action of the air for one month previously to using, and may be employed as above instead of bees' wax.

These materials having been melted together by the heat of steam, as above directed, are then to be submitted for three or four days to the action of chlorine gas, for the purpose of bleaching, and to be frequently stirred up during the operation; this is to be performed in a close vessel having glass windows for the admission of light into the interior.

The tallow thus prepared is now to be boiled, in pure water, for the purpose of removing all odour that it might have retained, and a quantity of newly prepared animal charcoal introduced, in the proportion of about one tenth the weight of the fatty matter. These are to be boiled together for the space of six hours, and afterwards filtered through woollen cloths, at a temperature of about 150° when the process of preparation may be considered to be complete, and the material fit to be moulded into candles, which should be done at the lowest temperature that the fat will flow.

The patentee proposes under some circumstances, instead of preparing the fat by boiling it in water, in the manner above described, to melt it in the ordinary way employed at present, by tallow melters, and then to mix one part of oil of turpentine with seven of tallow, after

which the cakes are to be submitted to pressure as above directed.

The turpentine expressed by this last mode of operating, may be recovered from the oily matters by distillation, and the residue of oil will be suitable for any of the ordinary purposes, of burning in lamps, making soap, or any other use to which animal oil has been commonly appropriated.

[*Inrolled September*, 1826.]

To Thomas Masterman, *of the Dolphin Brewery, Broad Street, Ratcliffe, in the County of Middlesex, Common Brewer, for his Invention of an apparatus for Bottling Wine, Beer and other Liquids, with increased economy and dispatch.*

[Sealed 19th February, 1825.]

The patentee, runs off the wine, beer, or other liquor from the pipe or butt, by means of an ordinary cock, into a trough or other suitable receptacle, and then draws it from the trough by a series of syphons, under the mouths of which, the bottles are placed to be filled. In order to regulate the supply of liquor to the trough, so that it shall not overflow, an air pipe is inserted through the bung of the cask, the mouth of which pipe is brought down into the trough, and when the liquor rises in the trough, so as to touch the pipe, its mouth becomes closed, and the passage of air through it is immediately stopped, consequently, the cask wanting an air vent, the liquor will no longer flow through the cock into the trough;

lime, oxymuriate of magnesia, or an aqueous solution of either of them. The wax or tallow is to be melted in an iron vessel lined with lead, and when so melted, the oxymuriate of lime or magnesia, or the aqueous solution of those materials are to be introduced, and well mixed up by stirring with a wooden spatula.

After these have been suffered to act a sufficient length of time to effect the object desired, the salts are to be removed from the wax or tallow, by adding some acid, which has a greater chemical affinity to the lime or magnesia than the oxymuriatic acid: sulphuric acid will answer this purpose.

The iron vessel lined with lead, in which the tallow or wax is to be melted, may be heated by a common furnace or by steam, or in any way that be deemed most eligible. The proportion of the materials proposed, are about one hundred weight of a solution of oxymuriate of lime, to about the same weight of bees' wax, which are to be heated to about the temperature of boiling water, and well stirred together while under operation. After this mixture has become consolidated, from fifty to an hundred ounces of sulphuric acid is to be added to it, the specific gravity of which shall be 1·8485; this quantity of acid is to be diluted with twenty or thirty times its weight of water, previously to introducing it. The whole is then to be boiled, keeping it well agitated with a spatula, until the lime is perfectly separated from the oxymuriatic acid.

The solution of oxymuriate of lime proposed to be employed for the above purpose, is made by dissolving from fourteen to twenty-eight pounds of the salt in about a hundred weight of water.

For bleaching animal tallow, from two to five pounds weight of the oxymuriate of lime, properly dissolved in water, is to be mixed with about an hundred weight of

but when the liquor in the trough has been so far drawn off by the syphons as to bring its surface below the mouth of the vent pipe, the air will be again admitted into the cask, and the liquor will flow into the trough as before.

Plate XII, fig. 1, represents the apparatus proposed by the patentee, in which *a*, is the cask from whence the liquor is to be drawn; *b*, the cock for running it into the trough *c*, *c*; *d*, *d*, *d*, *d*, are four syphons, the shorter legs of which are placed within the trough, and immersed in the liquor, the longer legs of the syphons are on the outside, and extend below, under the mouths which the bottles are to be placed.

One of the bottles is represented at *e*, resting upon a ledge fixed against the front of the standard of the trough, the end of the syphon being inserted into the mouth of the bottle. The air having been drawn from the syphon in the usual manner, the liquor flows up the shorter leg, and down the longer into the bottle; and in this way any number of bottles may be filled at one time from the cask, by the employment of the trough, and a corresponding number of syphons; and as each bottle becomes filled, it is to be removed, and its place supplied by an empty one: the liquor which runs over being received into the trough *f*, below.

The vent pipe *g*, is inserted into the cask through the bung, or elsewhere, and having universal joints at its angles, is brought down into the trough *c*, within a few inches of its bottom: the mouth of the pipe being open, to allow the passage of air through it into the cask; but when the liquor has risen in the trough *c*, up to the mouth of the pipe *g*, the air passage becomes closed, and the vent being discontinued the liquor ceases to flow from the cask.

[*Inrolled April*, 1825.]

To Joseph Eve, *late of Augusta Georgia, in the United States of America, but now residing at Liverpool, in the County of Lancaster, Engineer ; for his invention of an improved Steam Engine.*

[Sealed 24th November, 1825.]

This invention applies to a steam-engine upon the rotatory principle, and is divided into five several heads. 1st, The adaptation of cones, instead of cylindrical drums, to the rotatory parts of the engine, by means of which the surfaces may be more perfectly brought together after having been worn by friction, and hence the junctions kept steam-tight at all times, by very simple means. 2ndly, The construction of a steam generator, by a peculiar combination of tubes, which will be at all times filled with water, and hence prevent the heat of the furnace from burning or oxydating the metal. 3dly, The adaptation of revolving cocks, for supplying the generator with water constantly, instead of employing a forcing pump as is usually done for that purpose. 4thly, A safety apparatus, which indicates the amount of pressure within, in place of the ordinary safety valve acted upon by a weighted lever. 5thly. An arrangement of toothed-wheels, to combine the actions of two engines together, the one worked by high pressure steam, the other by steam at a low pressure, communicated from the eduction pipe of the high pressure engine; which combination it is considered will be productive of better effect than has heretofore been accomplished by any combinations of steam-engines of equal magnitude.

Plate XII, fig. 2, exhibits the engine in its most simple form: the face plate being removed to exhibit the internal

parts more perfectly; *a*, is the rotatory drum, or wheel, turning with its axle in the box or jacket *b, b, b*. There are three leaves, *c, c, c*, which act as pistons, working with steam-tight packing on their edges against the interior of the box or jacket *b*. The steam stop is formed by a roller the frustrum of a cone *d*, the periphery of which, turns in close contact with the periphery of the drum *a*; the drum also being made tapering, that is, formed as the frustrum of a cone. To the axle of the drum *a*, a toothed-wheel is to be affixed, taking into a toothed-pinion on the axle of the roller or steam-stop *d*, the teeth being so proportioned that the roller shall revolve three times while the drum goes round once: the design of which, is, that the leaves or pistons *c*, may as they approach the roller drop into a recess in the roller, and so pass the steam-stop without impediment.

The operations of this machine are as follows:—Introduce the steam from a boiler or generator, through the induction pipe *f*, when its elastic force exerting itself in the channel *e*, will cause the leaf *c*, and with it the drum, to proceed forward in the circular box, until another leaf advances past the roller *d*, which will then become acted upon: and so on, every leaf in succession, experiencing the pressure of the steam, will cause the drum to continue its revolution; and the volumes of steam having performed their office, will escape through the eduction passage *g*, either to the open air, to a condensor, or to another engine, to be worked by steam at a lower pressure.

Fig. 3, represents the same contrivance, with two steam pipes adapted, by which the mechanical power of the engine will be doubled; *a*, is the drum as before, turning upon its axle, in the steam-box, *b*; *c, c, c*, are the leaves or pistons, and *d, d*, are two rollers as steam-stops, acting by the same means, and in the same way as explained in

describing the preceding figure. The steam enters the engine by the induction aperture *f*, and passing along that portion of the steam way marked *e*, presses the leaf *c*,* forward until this leaf is about to enter the recess in the roller *d** ; when the steam having performed its duty, escapes at the eduction passage, *g*. At the same time a similar current of steam, being admitted at the induction aperture *f*,* passes along that portion of the steam-way, marked *e*,* acting against the leaf *c*,* and impelling it forward, until the leaf by entering the recess in the roller *d*, allows the steam which drove the leaf forward, to escape at the eduction passage *g**.

Fig. 4, exhibits another modification of the invention, being a double engine upon the same principle as those already described, in which two drums are combined and made to act together. The steam enters the engines by the pipe at top, and as the cylinders are running in contact, it acts against the wings of the two drums in opposite directions, and escapes at the eduction pipe below.

Upon the axles of the two drums, there are toothed-wheels of similar diameters, and with an equal number of teeth, which take into each other, and the combined power of the engines are communicated from either axle to actuate other machinery.

The drum, and the roller, have been described as frustrums of cones, that is, they are nearly cylindrical, but made slightly tapering, the utility of which is, that in the event of any of the parts wearing away, so as to allow the steam to escape, the cones may be slidden latterally, and thus brought again into close contact. This is done by means of the packing rings placed at the ends of the machine, which are to be screwed up when the contact of the rotatory parts are not sufficiently perfect.

The steam boiler or generator composed of tube, (cal-

led by the patentee, *a circulating tubular steam-generator,*) is shewn at fig. 5, a side view, and fig. 6, a front view. From the main tube *a*, at top, a series of branches *b*, *b*, *b*, proceed, and extend into horizontal tubes, from each of which, a number of smaller bent tubes or pipes, *c*, *c*, *c*, descend, and enter similar horizontal branch tubes, *d*, *d*, *d*, at their lower ends, and these in like manner to the upper tubes, unite with the lower main-tube, *e*. The water being introduced into the upper tube, flows through all the other tubes and pipes by its own gravity, down to the lower tube, and in its progress becomes subjected to the heat of the fire, which acts against the external surface of the bent pipes within the furnace. (This construction of a boiler is not very dissimilar in its plan and mode of operation, from several other tube boilers, particularly one for which Mr. A. Clark, of Dron Leachars, in the county of Fife, North Britain, obtained a patent, in 1822. See our Sixth Volume, page 57, and Plate III.)

The mode of supplying the generator with water, may be seen in fig. 6, where *f*, is a vessel or cistern placed on the side of the furnace, and filled with water, from whence it is intended to flow into the generator, through the cocks *g*, and *h*. These cocks are made to revolve, and have each a toothed-wheel affixed to their plugs, which wheels take into each other, and are actuated by the rotatory power of the engine. When the cock *g*, is open, the cock *h*, is closed, and hence a volume of water admitted from the cistern by the cock *g*, proceeds no further than the chamber *i*, until the cock *h*, opens and *g*, closes, when the water proceeds into the generator.

There are valves at top and bottom of each branch-tube *b*, and *d*, opening outwards, those in the lower tubes, falling open by their own gravity, those in the upper tubes, opening by the upward pressure of the steam. In the

event of any one of the small pipes *c*, bursting, the water will flow from the fracture, into the furnace; and the steam ceasing to rise in the fractured pipe, the upper valve will fall, and close; at the same time, the water flowing from the lower tube upwards, to supply that which has escaped from the fractured pipe, the lower valve will become closed also: and that branch and series of pipes, which have become injured will cease to act, without stopping the operation of the other parts of the boiler.

The safety apparatus, or improved escape valve, is shewn at fig. 7, and consists of a tube *a*, *a*, inserted at its base, into the boiler, or generator, or into some part of the steam pipe of an engine, whatever may be the construction of the engine, or its boiler; *b*, is a piston, fitted to the tube *a*, with the rod c, passing upwards, through a stuffing box for the purpose of guiding the ascent and descent of the piston; towards the top of the piston rod, weights are attached upon the ring *d*, in order to keep it down to any required pressure of the steam. A small passage *z*, is made through the piston upwards, by which the steam may pass into the space *y*, *y*, in the tube above the piston to render the pressure equal on both sides, with the exception of the area of the piston rod, the diameter of which alone, is unbalanced, and therefore any increase of force, exerted by the steam will act with greater effect on the under-side of the piston, than on the upper, and consequently raise it.

In the sides of the tube *a*, several long narrow slots or openings are made as shewn at *e*, *e*, and when by any extraordinary pressure of the steam, the piston rises, these slots become open, and the steam blows through them without opposition. Encompassing this part of the tube, a box *f*, *f*, is placed, of a globular or any other form, from whence a pipe proceeds to conduct the steam away. At

the top of the tube cups are attached to contain water, for the purpose of keeping the apparatus cool, and preventing the escape of steam and oil to lubricate the piston rod.

The general arrangement of the machinery, with two engines combined which forms the fifth and last feature of the invention, is shewn at fig. 8, in which the furnace containing the improved boiler or generator, is enclosed in the brick-work at *a*; *b*, is the cistern or reservoir of water, for supplying the boiler through the lower pipes by means of the rotatory cocks *c*, as described; *d*, is the chamber into which the steam from the generator passes; *e*, is the steam pipe, proceeding to the engine; *f*, is the safety apparatus, as described, from whence the steam under any extraordinary pressure escapes, by the pipe *g*, into the reservoir, and there becomes condensed.

The engine *h*, is to be worked by high pressure steam, and is of the construction represented at fig. 4, having two drums, the particulars of which have been already explained; after the steam has performed its duty, in the engine *h*, it escapes by the pipe *i*, and enters the larger engine *k*, which is similarly constructed to the foregoing, but is intended to be worked by the steam at a considerably reduced pressure; from this engine, the steam ultimately escapes, by the eduction pipe *l*, and becomes condensed in the reservoir.

An engine of the construction described in fig. 3, is placed as at *m*, which the patentee states "is to serve as a pump in this particular situation; the pipe *n*, is to draw the water from a well or river, and carry it into the refrigerator, and *o*, receives the water in the refrigerator, and carries it downwards."

The bellows for raising the fire is at *p*, and is worked by a crank upon the axle of a rigger, which is turned by a band extending from the pullies connected to the engine

ever, may be admitted without a stop-cock, of this construction, by a small passage, extending a short distance up the top piece, and then turning round, as shewn in the detached figure 10, where it is only necessary to unscrew the top piece until the air passage opens under the collar. In order to withdraw the ink from the cup *c*, and introduce it again into the chamber *b*, the passages must be open, and the vessel tilted, which will permit the ink to return through the channel *d*. The stop-cocks *e*, and *f*, being then closed, the ink is retained in the chamber, and preserved from evaporation, or the action of the air. The ink, however, may be withdrawn from the cup, by the employment of a piston or plunger, in the upper part of the chamber, which being fitted air tight, the rising of the piston will produce an exhaustion within the chamber, and thereby cause the ink to flow back and the digression of the piston will conduct the air, and expel the ink into the cup, which contrivance, is shewn in the detached fig. 11.

This ink-stand may be made of any kind of metal, or other material that may be found convenient or desirable, but where the ink is liable to act chemically upon the metal or other material of which the vessel is made, it is proposed to coat the interior with a glazing or japan, or any other substance which is not likely to be corroded or acted upon chemically by the ink.

Figs. 12 and 13, represent the external appearance of a fountain pen, in different positions to which one of the improved ink-holders is adapted. Fig. 14, is a section of the same; *a*, is the tube in which the ink is contained, closed at top by a plug *b*, and the end of the tube is covered by a cap, *c*. At the lower part of the tube a pen-holder *d*, of the ordinary construction is attached, for the purpose of receiving a cut quill or other kind of

pen-nib, which is to be supplied with ink by the finger of the writer (as occasion shall require) by turning the small lever of a stop-cock *e*, the opening of which, allows the ink to flow in small quantities through a narrow channel down to the nib; and in order to admit a sufficient supply of air to the interior of the tube or chamber *a*, a very small hole is made through the cap, and the plug as shewn in fig. 14, the stop cock *e*, is shewn detached at fig. 15; the plug at fig. 16, and the cap at fig. 17.

Fig. 18, represents an ink-holder of the construction last described, combined with a pencil or crayon case; fig. 19, is a section of the same; *a*, is the ink-chamber; *b*, the channel for conducting the ink to the nib when the stop-cock *c*, is open as above described; *d*, is the end cap, which encloses and preserves the nib when the pen is not in use. This cap is shewn in section removed from the pen at fig. 20; *e*, is a pin or plug intended to pass into the channel *b*, for the purpose of preventing the accidental escape of the ink, and for keeping the channel from becoming closed by the drying and hardening of the ink.

At the reverse end of the ink-holder, the cylindrical tube or case, is extended to form a pencil-holder; *f*, *f*, is the outer case; *g*, the conical point conductor, similar in construction to other pencil-holders already in use. Within the cylindrical case there is a tube *h*, shewn detached at fig. 21, having a long slit extending its whole length; within this there is another tube *i*, with a screw formed on its exterior, and also having a slit from end to end, as shewn in the detached fig. 22. A steel rod *k*, (see fig. 23,) is intended to pass down the interior of the tube *i*, and its turned up end to protrude through the long slot of the tube *i*, this rod is to act as a projector of the crayon or pencil, which is attached to it by a spring clip,

as in some other well known pencil-holders, the different views of which spring-clip are shewn in figs. 24 and 25. On the exterior of the tube *i*, two collars at fig. 26, are to advance and recede by screwing, and which are to embrace the turned-up end of the projector, as seen in fig. 19. A small square piece extending on the side of each collar, protrudes forward for the purpose of passing into the slot of the tube *h*, within which, the tube *i*, and also the projector and collars is now to be inserted, as seen in fig. 19.

On turning the conical point conductor by the finger and thumb (the outer case being held stationary), the tube *i*, is carried round, and the screw on the external surface of the tube *i*, working in the collars, cause them to advance or recede, their square parts sliding in the long slot of the tube, *h*; and by confining the turned-up end of the projector, cause that, and the crayon or pencil, which is attached to it, by the spring clip, as before-said, to be moved backward and forward.

[*Inrolled September*, 1826.]

To John Frederick Smith, *of Dunston Hall, in the Parish of Chesterfield, in the County of Derby, Esq. for his Invention of certain Improvements in Dressing and Finishing Woollen Cloths.*

[Sealed 11th January, 1825.]

These improvements in dressing and finishing woollen cloths, consists in submitting their surfaces to the operation of polishing or rubbing and cropping, by means of

a peculiarly constructed carding cylinder, in which operation the pile of the cloth is intended to be raked, and laid straight in one direction, and at the same time the pile partly shorn, by a series of knives.

In plate XIII, fig. 1, is a side view of the machine, in which the cloth is to be operated upon; *a*, *b*, are guide-rollers, between which the cloth is passed, extended smoothly breadthwise; *c*, is a tension roller, turning in standards, the weight of which, keeps the cloth tight against the carding cylinder *d*. This cylinder has blocks with fillets of cards, or bent wires *e*, *e*, *e*, placed in the direction of its axis round its periphery; and between each fillet a knife *f*, *f*, *f*, is affixed. The cloth having passed over the cylinder *d*, is conducted under the second tension roller *g*, and then between the drawing rollers *h*, *i*, and over the delivering roller *k*, from whence it falls to the ground, and may be laid in folds by an oscillating arm, actuated in the way usually adopted in these kind of machines, when the cloth is required to be laid in even folds.

The wires of the cards are intended to act in this machine in the contrary way to which cards usually act: instead of the points of the wires drawing out the pile as usual, the backs of the wires rub against the cloth, in order to smoothen its surface, and at the same time by their elasticity, prevent the knives from cutting any more than nearly the ends of the pile.

The actuating power whether of steam, water, or any other first mover, being applied to the axle of the rigger *l*, a band from that rigger passing over a pulley *m*, affixed to the axle of the carding cylinder, causes the carding cylinder to revolve with considerable velocity. An endless screw *n*, on the axle of the rigger *l*, takes into a toothed-wheel *o*, upon the vertical shaft *p*, and at the top

of this vertical shaft another endless screw *r*, actuates a toothed-wheel *s*, affixed to the lower drawing roller *i*. By this arrangement, the cloth is slowly drawn forward, while the carding cylinder revolves rapidly, cropping and polishing the pile on the surface; and the band *t*, *t*, which extends from a pulley affixed to the drawing roller *i*, passing over a pulley attached to the guide-roller *b*, causes the drawing and guide-rollers at the opposite ends of the machine to move with the same rapidity, and thereby to bring the cloth progressively forward from the keep, as shewn in the figure.

The patentee claims the whole of the machine combined, as a novel arrangement of parts applied to the dressing of woollen cloths, and he particularly mentions the cylinder as new in its construction, and forming a very essential part of his invention.

[*Inrolled July*, 1825.]

To Samson Davis, *of Upper East Smithfield, in the County of Middlesex, Gun-lock Maker, for his Improvements applicable to Guns and other Fire-arms.*

[Sealed 18th December, 1824.]

The professed object of these improvements, applicable to fire-arms, are to prevent the dangerous consequences which sometimes attend the discharge of fire-arms, when ignited by means of the copper cap, and other detonating contrivances, the particles of which, occasionally fly about to the injury of the sportsman or the bystanders, and to prevent the priming from wet to which it is subject when exposed. The patentee therefore fixes the nipple

upon which the copper cap is to be placed in the direction of the axis of the barrel, in the back part of the breach, and encloses it completely within the stock, forming a chamber in the front part of the lock, which is to receive the particles of the priming, at the time of the explosion. In order to gain access to the nipple, for the purpose of attaching the copper cad, or other priming, it is proposed that the barrel of the gun shall turn-up on a joint at the breach, and when primed, turn down again and fasten to the under part of the stock by a bolt.

Plate XIII, fig. 3, shews the contrivance; the stock being cut in section to exhibit the lock within; *a*, is the barrel turned up on its joint at *b*; *c*, is the hole through which a bolt is protruded, to fasten it when shut down; *d*, is the small of the butt; *e*, the lock; *f*, the hammer; *g*, the trigger; *h*, the sliding striker, which when shot forward, gives the bang to the copper cap, previously placed upon the nipple *i*, and thereby explodes it.

The details of this contrivance, are so very imperfectly set forth in the specification, that we are only capable of giving a general idea of the intended construction, not being able to explain the actions of the particular part. By drawing back the hammer *f*, the sliding striker *h*, recedes, and the main-spring is put in tension; on pulling the trigger the scar and the tumbler is acted upon, and the striker discharged, but by what form or combination of mechanism we are unacquainted.

The end of the striker giving the blow to the copper cap, placed upon the nipple as before-said, causes the explosion, and the particles of the primer being confined within the close chamber *k*, cannot fly about and do mischief as when exploded on the outside of the gun in the ordinary way; besides the priming being enclosed is not subject to be effected by rain or other damp.

[*Inrolled June* 1825.]

To Enoch William Rudder, *of Edgbaston, near Birmingham, in the County of Warwick, Cock-founder, for his Invention of certain Improvements on Cocks for Drawing off Liquids.*

[Sealed 18th January, 1825.]

The patentee having observed, that very considerable inconvenience frequently arises from the plug of a liquor cock fitting too tightly into its socket, and that to prevent leakage, such fitting must be very accurately made, proposes as an improvement in the construction of cocks generally, to place a tube of cork round the plug, and to cause the elasticity of the cork to produce the air and water tight fitting, instead of bringing the accurately ground surfaces of the metal plug, and its metal socket together, as is usually done.

There may be several modes devised of coating the plugs of the cocks with cork, one mode suggested by the patentee, is to cut the cork to its cylindrical figure, fitting the socket, and then to bore the aperture for the plug, by means of a sharp cylindrical tool; or the cork may be formed in a lathe, by turning against a sharp tool. It is proposed when these coatings of cork are properly fitted, that they should be immersed in water and boiled in their sockets, having a plug within to keep the cork to its figure; by which means, they will be made to fit more perfectly.

This contrivance may be applied to cocks of almost every form and kind, and therefore the patentee does not confine himself to any particular shape, but claims the invention of coating the plugs or lining the sockets of cocks, with cork, as perfectly new.

[*Inrolled July,* 1825.]

Original Communication.

To the Editor of the London Journal of Arts, &c.

SIR,

I FEEL anxious that a description of a rotatory pump, constructed by Messrs. Taylor and Jones, Jewin Crescent, Cripplegate, should be given to the public, through your interesting scientific publication; and for that purpose inclose a diagram. Mr. Joseph Eve is the inventor of this hydraulic machine, and the principle is precisely the same as that of his rotatory steam-engine, for which a patent has been obtained recently.

Plate XII, fig. 9, exhibits the external, and fig. 10, the internal construction of the pump. Two cylinders *a*, *a*, turning on axles, are placed in contact, and made to revolve in opposite directions in an outer case *b*, through the ends of which the axis protrude; each cylinder has two wings, leaves, or pistons *c*, *c*, and two recesses; and in revolving, the wing or leaf of one cylinder falls regularly into the recess of the other, where their peripheries touch, and so on alternately. The equal motions of these cylinders are regulated by a pinion of cog-wheels *d*, *d*, gearing into each other, placed outside the case and affixed to the projecting axles. The speed of the wheels which drive the cylinders round, is increased by a larger toothed wheel *e*, to be worked by a common handle. The pump case is connected by means of flanches and screws to a pipe *f*, leading down to the well, (which at the manufactory, in Jewin Crescent, is 21 feet deep). The two cylin-

ders above described, are $3\frac{1}{2}$-inch diameter, by 6 inches long, and the wings $\frac{3}{4}$ of an inch. The quantity of water pumped up by two men, placed at the handle of the multiplying wheel, is half a ton in three minutes, which considering the imperfections of this first pump constructed on Mr. Eve's principle, is a result highly gratifying, and needs no comment.

Rotatory motion being given by means of the winch *g*, to the large wheel *e*, the teeth upon that wheel take into, and actuate one of the pair of smaller toothed-wheels, *d*, *d*, which work into each other, and these being affixed to the axles of the cylinders *a*, *a*, within, cause the cylinders to revolve with their peripheries, in contact. The outer edges of these leaves, wings, or pistons, *c*, slide round against the circular parts of the interior of the box *b*, and by creating a partial vacuum, in the first instance, in the rising main *f*, causes the water to flow into the box. As the cylinders revolve, the wings *c*, now lifting the volumes of water, which encompass the outer halves of the periphery's of the cylinders *a*, *a*, forcing it to the upper part of the box and thence through the discharge pipe *h*.

Some of the advantages which this pump is presumed to possess over the ordinary reciprocating pumps now in use, are the following:

1st. Being made entirely of metal, and having but two moving parts requires no packing or leathering whatsoever, in fact having no parts that touch, except the axis or pivots, it cannot wear much or get easily out of order.

2nd. The quantity of water raised or forced by this pump is as the velocity of the cylinders and the force applied—and considering that there are no valves to open and close as in ordinary pumps, and the motion rotatory, its velocity may be increased to almost an unlimited degree, if there is need or it should be thought expedient.

3rd. By screwing to the top of the pump case an air-vessel with a hose and pipe in lieu of the eduction pipes, it is at once converted into the most simple and effectual fire extinguisher or garden engine.

4th. It occupies less room than other pumps, and the weight and mass of pump-work, if used for deep wells or mines, is greatly reduced.

5th. The friction being so trifling, more water can be raised by this pump, with a given power.

6th. It is extremely simple in construction, greater in strength, and of a more elegant form than common pumps.

7th. Finally, it can be worked to the greatest advantage, by manual or animal power.

Besides these it has peculiar advantages as a ship's pump and for deep mines, will be found to be superior to any other construction of pump heretofore introduced.

I am, Sir,

Yours, &c.

J. GANAHL.

Novel Inventions.

Leslie's Apparatus for ascertaining the Specific Gravity of Powders.

THE instrument consists of a glass tube *a, c,* about three feet long, and open at both ends. The wide part, see plate XIII, fig. 27; *a, b,* is about 4-10ths of an inch in diameter; the part *b, c,* about 2-10ths. The two parts communicate at *b,* by an extremely fine slit, which suffers air to pass, but retains sand or powder. The mouth at *a,* is ground smooth, and can be shut, so as to be air-tight, by a small glass plate *f.* The substances whose specific gravity we wish to find, suppose it to be sand, is put into the wide part of the tube *a, b,* which may either be filled to the top or not. The tube being then held in a vertical position, has the narrow part immersed in mercury, contained in an open vessel *x,* till the metal rises within to the gorge *b.* The lid is then fitted on air-tight at *a.* In this state, it is evident there is no air in the tube, except that mixed with the sand in the cavity *a, b.* Suppose the barometer at the time to stand at 30 inches, and that the tube is lifted perpendicularly upwards till the mercury stands in the inside of *b, c,* at a point *c,* 15 inches (or one half 30) above its surface, in the open vessel; it is evident then, that the air in the inside of the tube, is subjected to a pressure of exactly half an atmosphere, and of course, it dilates and fills precisely twice the space it originally occupied. It follows, too, that since the air is dilated to twice its bulk, the cavity *a, b,* contains just half of what it did at first, and the cavity *b, c,* now containing the other half, the quantity of air in each of these parts of the tube is equal, in other words the quantity of air in *b, c,* is exactly equal to what is mixed with the sand in *a, b,* and occupies precisely the same space which the *whole* occupied *before* its dilatation. Let us now suppose the

sand to be taken out, and the same experiment repeated, but with this difference, that the cavity *a*, *b*, is filled with air only. It is obvious, that the quantity being greater, it will, when dilated to double the bulk, under a pressure of 15 inches, occupy a larger space, and the mercury will rise, let us suppose, only to *d*. But the attenuated air in the narrow tube always occupies exactly the space which the whole occupied at ordinary atmospheric pressure, and this space therefore is in the one case the cavity *b*, *c*, and in the other, *b*, *d*. Hence it follows, that the cavity *c*, *d*, which is the difference between these, is equal to the *bulk of the solid matter in the sand*. Now, by marking the number of grains of water held by the narrow tube *b*, *c*, on a graduated scale attached to it, we can find at once what is the weight of a quantity of water equal in bulk to the solid matter in the sand, and by comparing this with the weight of the sand we have its true specific gravity.

Aware that some solid bodies, such as charcoal, hold much condensed air in their pores, and that probably they retain part of this even when reduced to powder, Professor Leslie obviates the chances of error arising from this source, by comparing the dilatation which takes place under different degrees of pressure, under 10 inches, and 20 for instance, or $7\frac{1}{2}$ and 15.

Charcoal, from its porosity, is so light, that its specific gravity as assigned in books, is generally under 0.5, less than half the weight of water, or $\frac{1}{7}$ the weight of diamond; taken in powder by the above instrument it exceeds that of diamond, is one-half greater than that of whinstone, and is, of course, more than seven times heavier than has usually been supposed. Mahogany is generally estimated at 1.36, but mahogany saw-dust proves by the instrument to be 1.68: wheat-flour is 1.56; pounded sugar, 1.83 and common salt, 2.15: the last agrees very accurately with the common estimate. Writing-paper, rolled hard by the hand, had a specific gravity of 1.78, the solid matter present being less than one-third of the space it apparently filled. One of the most remarkable results was with an apparently very light specimen of volcanic ashes, which was found to have a specific gravity of 4.4. These results are, however, given as approximations merely by the first instrument constructed.—*Scotsman.*

Description of an Improved Mortise Lock. Invented by Messrs. John *and* Thomas Smith, *Darnick.*

Plate XIII, fig. 28. *a*, is the spring bolt, cranked inside to avoid the key of the lock-bolt, and to bring its nose and tail into the same line.

b, the tumbler, or follower, of hardened steel, made to work upon the breech *c*, *c*, which is of brass, and fixed to the bell by the tenor *c*, *c*.

e, a piece of brass, with an oblong hole through it, to admit of the tail *f*, working through it, to keep the bolt in its proper place and diminish the friction.

The spring *g*, and player *h*, are brought to the fore end of the lock, which allows it to be narrowed at the other end.

In the lock-bolt and night-bolt, there is little difference from the common lock.

The advantages of a lock constructed upon this plan, are the following, viz.

1st, It is less bulky than the common lock, easier put on, and does not weaken the door so much.

2d, There is less friction in the working, from the spring being placed to *draw*, in place of *pushing*, as in the common lock. The slide at *f*, also contributes much to diminish the friction.

3d, It works with perfect equality, whichever way the handle is turned, from the tumbler being placed exactly in the line of the centre of the bolt; which it is evident the common lock can never do, from the tumbler being placed so far from the bolt. In the common lock there is a difference, in most cases, of between 30 and 40 per cent. between the turns of the handle, which is the reason of the bolt coming readily back when the handle is turned the one way, and often sticking fast when turned the other way.

This we conceive to be the principal advantage of our lock.

greater than would be necessary to grind it, were a mill construct-ed, that could be worked with facility by a horse, or an ox. In such a mill, the very animal which is now employed to carry the grain, and wait for, and return with the flour, might sometimes grind ten times the quantity in the time which is necessarily lost.

Various plans for making cheap and simple mills, have been proposed, but from their not getting into general use, it is to be presumed that they have not been found to answer the purpose. The writer feels confident that the objections which have existed to those which have been heretofore erected, will be completely obviated by the plan which he is about to propose. He is aware that economy is a point of the first importance; the mill which is here described, will cost much less than those which have been heretofore erected for a similar purpose; its construction is very simple, and the common country carpenter and smith, will find no difficulty in completing it.

The plan it is believed is new, and that it is effectual, has been fully ascertained, as the writer has a mill of the description, now at work. The subjoined sketch, will give a sufficient idea of those parts which it is necessary to describe.

Plate XIII, fig. 29, *a, a,* are the mill-stones; *b,* the spindle, which supports the upper stone: *c,* a drum, upon the spindle, made long, to prevent the belt from running off; *d,* a large gin, with its shaft and arms; the lever to which the horse is to be yoked, is not represented; *e,* the belt of tanned leather, five or six inches broad, with a buckle, to give it the necessary tightness.

It has not been thought requisite to represent the hopper, and other necessary appendages, as with these every country mechanic is sufficiently acquainted.

The larger the circle in which an animal draws, the greater will be his power. Less than eighteen feet will not answer, but twenty-four feet will probably be found in most instances, to be more suitable. If a horse make three turns in a minute, in a cir-cle of this size, he will travel at the rate of about two and a half miles in an hour. Then if the diameter of the gin, or large drum be to that upon the spindle, as forty to one, the stone will make

one hundred and twenty revolutions in a minute. In this case the gin may be thirty feet, and the small drum, nine inches in diameter; but it will probably be better to allow one foot for the drum, which will give to the stone, ninety revolutions, the track of the horse remaining as before; it is evident, however, that if this track is made smaller, the horse, travelling at the same rate, will give greater velocity to the stone.

There are several advantages in making the belt wide, as it takes a firmer hold, is less subject to stretch, and less apt to slip off.

In different diameters of the stones, and other changes, the whole must of course be so modified as to suit them, but this can be done by any man of common understanding. It will always be best to place the whole under cover, not only to preserve the wood-work, but to enable the farmer to work in wet weather; the belt if wet, would stretch, and not turn the stones. It will probably be found best, in most cases, to place the stones, hopper, &c. in the corner of a barn, or other suitable building, with the gin on the outside, and the strap passing through holes made for the purpose.—*Franklin Journal.*

On an Improvement in Carriages, for the prevention of accidents. By J. S. Williams, Esq. *of Baltimore.*

(*From the Franklin Journal.*)

The Committee of Invention of the Franklin Institute, having had referred to them, for their examination, an improvement to prevent accidents in carriages, by disengaging the horses, or locking the wheels, for which improvement a patent has been granted to John S. Williams, Esq. of Baltimore:

Report, that they have carefully examined the model of a carriage with these improvements; and that the manner in which horses are to be disengaged, is as follows:—The pole or pin is perpendicularly drawn through them, by which they are affixed to the carriage; this pin is firmly attached to a spring, which, bear-

ing upon it, keeps it securely in its place; but when this spring is raised, the pin rises with it, and the pole and swingle-tree are disengaged, and the horses of course liberated.

To enable the driver to raise the spring with facility, it is terminated by a hook, to which a strap or chain is fastened, the other end of which, may be fixed to the foot-board of the driving seat. By pulling this strap or chain, the disengagement is effected.

For the purpose of locking the wheels, a piece of wood is firmly secured to the perch, or frame work of the carriage, crossing so that the ends terminate within a few inches of each wheel, just within the rim. Upon this piece of wood there are two bolts sliding through staples; when the wheels are to be locked, these bolts are projected forwards by two springs, which can be made to bear against them for that purpose: when projected, the ends or the bolts pass between the spokes of the wheel, close to the felloes, and the wheels are consequently locked. On the front of the foot-board there is a short lever or trigger, with a catch, to which a strap is attached, the other end of which is connected with the springs; by forcing the trigger forward with the foot, the springs are liberated, and act upon the bolts.

This latter apparatus, may undoubtedly, be useful on many occasions, as the driver can lock the wheels, and also liberate them without leaving his seat: the utility of locking, to retard a carriage in descending, or to prevent the horses from running backwards, when ascending hills, is obvious. This can be applied to a carriage with two wheels, where the disengagement of the horse would be inadmissable.

The Committee are aware that the same end has been obtained by other methods. In the year 1802, a patent was granted in England, to Richard Pattinger, for disengaging horses from a carriage, and for an anchor, or drag, to be thrown out to retard it.

At about the same time, a premium was awarded by the Society for the Encouragement of Arts, &c. to William Bowler, for the application of a lever, so as to clip the nave, or hub of a wheel, to stop its motion.

A patent, with the same date as the first, was obtained by John Lewis, who proposed to lock the wheels by means of a ratchet taking into the nave, or hub of the wheel, and also to disengage the horses.

Another plan was exhibited to the Society for the Encouragement of Arts, &c. by George Davis; in this, the pole was disengaged, and wedges forced forward, so as to press upon the nave or hub, to retard or stop the wheel.

"The Committee are informed, that Patents have been obtained in this country, for similar objects; but they have never seen any such plan put into operation, nor do they know of any having been made public.

That which has been submitted to them is much more simple than either of those to which they have alluded, and should it be adopted, particularly in stage coaches, it would, undoubtedly, be the means of preventing many fatal accidents.

Philadelphia, June 17, 1826.

By order,

THOMAS P. JONES, *Secretary.*

Polytechnic and Scientific Intelligence.

SOCIETY OF ARTS.

PROCEEDINGS OF THEIR COMMITTEES.

[Continued from page 160.]

Committee of Mechanics.

May 4th.—Skinner's trap for destroying rats and other vermin; the floor of the trap is supported and balanced

upon a roller and when the animal approaches the bait, its weight causes the floor to tilt over, and precipitates the animal into a vessel of water below, where it is immediately drowned.—Skinner's grating, for the sink holes of sewers, to be employed as street drains. The sink hole is formed by a square box, the upper part of which is an open grating, and on one side is a box, swinging upon hinges above, and when water and other matters run down the drain into the box their weight causes the flap to open and allow it to pass: closing again immediately, and thereby preventing all effluvia from rising.—Deykes's field-gate in which instead of the ordinary hinges, the top bar extends and forms a block, wherein a hole is made on the underside to receive the end of a spike, set into the standard-post and upon this spike the gate swings.—Gowland's compensation pendulum, suspended by a spring, the ends of which, bear against fixed points, and as the temperature alters, the centre of gravity becomes raised or lowered.—Towson's banking for a chronometer, consisting of spring studs adapted in a new way.—Spine's screw-press, in which the axis of the screw, is considerably extended upwards, and made to work in a box, or collar above, for the purpose of steadying its action.—Jones's rolling press for squeezing water out of cloths, which have undergone the process of scowering, washing, or fulling, in which a lever is applied to increase the force of pressure.

May 9th.—Edward's machine for drawing sections of levels over an extended line of country, in order to shew the undulations of the surface, preparatory to projecting a new line of road or canal, or any other such course of communication. The machine runs upon three ordinary wheels, and to the axle of the front wheel, gear is attached, which as the wheel revolves, by the advance of the carriage, causes a rotatory tracer, (a star wheel), to tra-

verse over a paper, laid upon a drawing-board, and to mark the line of the road upon the paper, by points: a pendulum being attached also to the machine, with gear, which according to the ascents and descents, of the country directs the tracer above or below the horizontal line previously drawn upon the paper, and by these means marks the outlines of the section of the country, over which the machine traverses.—Hall's method of slating houses in which he proposes to reduce the weight of the roof, by laying the slates with less over-laps, and places them angularly instead of square as usual.—Mills's prop for sawyers, formed like a crank, by which after passing the saw through the timber up to the rest the crank bearing is turned forward upon its pivots, and brought to bear in front, without the trouble of shifting the bearing as is commonly practised.—Cross's bridge to be formed by frames of net-work attached together.

May 11th.—Brickmore's mode of preventing fire from spreading, by covering the adjoining roofs with wet blankets, or wet carpets, and also hanging the same sort of materials in front of the windows.—Huxham's mode of preventing the leakage of cocoa nut oil, in its conveyance on ship board. The casks are to be well hooped, and filled no higher than within about eight inches of the bung, by which the oil is allowed to expand within the cask, as the temperature increases.—Lieut. Miln's reel for communicating with the shore from a stranded vessel, through the surf. A spar or handspike, or any other wooden rail, has two empty casks attached to its ends, and the rope by which the communication with the shore is to be made, is coiled round the spar. One end of the rope being secured to the vessel, this reel is thrown overboard and the waves washing it towards the shore, cause the casks to revolve, the spar forming their axle, and to unwind the rope

as it goes forward; the old mode being to attach the rope to a buoy, and to allow the buoy to float on shore, but that is always a tedious and uncertain operation and is sometimes ineffectual.

May 12th—Megson's valve and stand pipe for supplying water from the mains in the open streets in frosty weather. The fulcruum of the valve or cock at top of the stand-pipe is placed immediately over the valve which affords a very considerably increased power of leverage, and thereby enables the valve to rise, though pressed upon by the weight of the column of water.—Palmer's slide rest and carriage for an engraver's ruling engine, the bearing of the cutting tool being upon an angular edge, and the action confined by a rebate or ledge at top, which prevents the tool from rising out of its place.

After this period, the committees discontinued their deliberations, and the Society adjourned their meeting until the winter.

MESSRS. DEROSNE *on the use of Alcohol for purifying and refining.*

THE process usually employed for refining rough sugars compels the use of a considerable quantity of lime water, and bullocks' blood. The refiners have been uncertain of the proper proportions to be used, being generally unacquainted with the action of the first, and with the ill effects resulting from too great an addition of the second. The chemical effect of the compound is unknown to refiners generally. In the process all is uncertain, the heat necessary to be employed alters the quality of the material, and the boiling of the syrup increases the inconvenience,

separation, it is, however, easily held in separation by the alcohol from the sugar, which precipitates itself to the bottom of the vessel, under the appearance of a white sand. The sugar being well drained and dried by a very gentle heat, or in the open air, has the appearance and the taste of the fine Martinique and Havannah Sugars, and possesses a degree of dryness seldom to be met with in these, with very little colour; when it is wished to make it remarkably fine, it is dissolved after being well drained, but not entirely dry, in the requisite quantity of water heated in a covered vessel, in order to draw from it by distillation the small portion of alcohol which it retains. This process is much more expeditious than the former, as in less than twenty-four hours we obtain a result, which used to require a much greater time; we employ no combustible and greatly diminish the labour required. The alcohol employed for this purpose is not lost, that portion of it which is the most highly coloured, is immediately distilled, and gives for residue a molasses or sugared substance, not crystallizable, to be preferred for flavour, purity and clearness, to that which comes from the refiners. The other portions of the alcohol are made use of for the first washings of the new raw sugar till it becomes saturated with molasses. By the use of the alcohol the finest kind of lump sugar may be obtained in less than a month, and in much less time a powdered sugar of superior whiteness. The quantity of alcohol to be employed varies with circumstances but generally approaches to the weight of sugar.

A new Lithographic Wash, by M. ENGELLMAN.

It is still to be regretted that the means of giving effect to the delicate parts of designs, executed in Lithography,

such as the clouds, the reflection of light, and the distances of landscape, remain to be discovered, we are therefore compelled to confine ourselves to the most simple touches, or incur the risk of tendering the parts too heavy or too black, in the absence of half-tints, so essential to the harmony of the design. M. Engellman has rendered the most essential service to the art by his lithographic wash, of which he has already made the most happy application, in the fine collection of monuments of ancient France, by M. M. Taylor, de Cailleux, and Charles Nodier, combining the advantages of a rapid and easy expedition with affording to the artist a distinct view of the effect of the tints as they are produced. We give the details of the process as it is described in the eleventh volume of the Brevets of Invention.

Composition of the Ink.

Put into a metal vessel, four parts of virgin wax, two parts of tallow, two parts of dry soap, melt the mixture, stirring it frequently, till it becomes of an inflammable temperature, then throw in three parts of gum lac, and one part of water, saturated with salt, when the scum has ceased to appear on the surface, mix in one part of lamp-black, the lightest possible, of the quality made at Paris, adding afterwards four parts of common printer's ink, let the mass cool, then for the facility of use, make it into sticks of about an inch and a half in thickness.

Composition of the Reserve.

To three parts of water, in which gum arabic has been dissolved in sufficient quantity to give it something of the consistence of oil, add one part of ox gall, and as much vermillion as to give a deep colour to the mixture, so as to distinguish easily the work upon the stone. Every other colour produces the same effect, but the vermillion

appears preferable on account of the brightness which makes it come out of the black, which sometimes covers it too strongly.

Design upon Stone.

To prepare the stone for the lithographic wash, it is necessary to give to it the finest grain possible, and the most equal surface, rub the wrong side of the paper with blood stone, following the strokes with a blunted point, this operation finished, cover the margin of the stone, and generally all the parts which should remain white, with the reserve before described; this colour ought to be sufficiently fluid to permit of the finest lines being made with the pencil, then pour some drops of the essence of terebenthine upon the stone, rubbing the surface with a stick of the ink, the composition of which has been described, continuing this till the liquid ink which has been formed by this operation, becomes of a consistence fit for use, which can only be ascertained by experiment, then charge a tampon such as is used by printers, covered with white leather, it is convenient to have several of these of different dimensions for covering the various spaces. There should be very little colour upon the tampon as only the jutting out parts of the stone should receive the colour, the experiment should be first made upon a stone that has no design, when it produces the tone required, then tampon as equally as possible the whole of the surface till it as acquired the lightest tint of which it is susceptible then cover again with the reserve the places judged to be sufficiently coloured, and in diluting the ink, which may have dried during the operation, repeat the tamponing and thus produce a stronger tint, after which, cover and tampon alternately, till the most vigorous tone is produced then soak the whole of the stone in water, and rub it with a sponge.

The reserve having formed an impenetrable bed for the colour, and prevented the places which had been covered from being too deeply charged with the black, it then dissolves carrying off all the surplus of colour, which the tampon had deposited, all the tones will then appear corresponding with the design which has been traced with the reserve. Squeeze the sponge repeatedly and wash the stone, so that there may not remain the least vestige of the gum. If some parts of the design are considered to be not sufficiently coloured, the colouring and tamponing should be repeated till this object is effected; these operations finished, it may sometimes be necessary to retouch the design with a crayon, or with lithographic ink, or to take away parts with the scraper, the stone is then prepared by passing over it, an acid spread with water in the same manner as an ordinary design with a crayon, the printing is performed with the presses commonly used in lithographic work-shops.

On the use of animal charcoal for purifying Pyrolignous Acid. By M. Berzelius.

According to a statement made at the Royal Academy of Sciences at Stockholm, it appears, that by the use of animal charcoal, every particle of empyreumatic oil may be removed from pyrolignous acid.

M. Berzelius has discovered by some experiments, that the residue of the charcoal obtained in the fabrication of Prussian blue, at the time of the extraction of the *hydrocyanate ferro of potash*, possesses this power to such a degree, that a very small quantity of it suffices to purify the pyrolignous acid, and to deprive it of all empyreumatic

flavour. The whole process consists in mixing the acid with the charcoal,and afterwards straining it. Hartshorn purified by distillation and charcoal, is at first white, but becomes afterwards darker, because the empyreumatic oil contained in it is not absorbed, but only rectified, M. Berzelus apprehensive that the same result might ensue with the pyroligneous acid prepared as before described, left some of it in a bottle badly stopped, for the space of five months, and at the end of that time, could not, after putting it to the most severe tests, discover any appearance or flavour of the empyreuma.

On the dissolution of Gold for ornamenting Book-covers. By M. R. Kroeze.

The book-binders are acquainted with the process, which consists in making use of water to marble leathers, by means of a dissolution of iron, but a dissolution of gold may be made use of for the same purpose. In order to do which, leaf gold or gold filings, must be thrown into a mixture of muriatic acid, and nitre, and left in it till dissolved. Care must be taken that no greater quantity of acid be used than is absolutely requisite, for the dissolving of the gold, when that is done, a small portion is concentrated in order to evaporate any superfluity of acid. After this, the dissolution is spread with spring water, or pure rain water, and the more it is concentrated the deeper red will the marble be. If too much be spread out, its quality will be injured. This mixture has the property of dying undressed skins of a purple colour, but it has not this effect on leather, to obtain the last result, it will be necessary to do over again the binding that is to be

marbled with a layer, consisting of *hydro-chlorate* of pewter, by means of this new process, the metal precipitates itself, and assumes a red colour, which resists the action of the most active acids.

On Softening Cast Iron.

A METHOD has lately been discovered, to make cast metal soft and malleable; which consists, in placing the cast metal in a case or pot, along with, and surrounded by, a soft, red ore, found in Cumberland, and other parts of England. The cases are then put into a common oven, built with fire-bricks, and without a chimney, where they are heated with coal or coke, placed upon a fire-grate. The doors of the oven are closed, and but a slight draft of air permitted under the grate; and thus a regular heat is kept up, for the space of seven days, or two weeks, depending on the thickness and weight of the castings. The cases are then taken out, and suffered to cool, and the hardest cast metal is, by the operation, rendered so soft and malleable, that it may be welded together, or when in a cold state, bent into almost any shape, by a hammer or vice. In this manner are all articles, such as harness buckles, bridle bits, horse shoes, and even nails, made tough and malleable. Cast horse shoes, submitted to this process, have, after being worn out by the action of the horses' feet, been converted into penknives, and other articles of cutlery, of a superior quality. Those castings, however, which are made from pig iron containing the smallest portion of carbon, are the best adapted for conversion into malleable iron: the only effect produced by the introduction of the red ore, along with the metal, is to deprive it of its carbon.

American Patents, 1826.

Improvements in the rocking washing machine, April 12, John G. Philip, Kinderhook, New York.

In the method of cutting mortices, April 12, Thomas Green, Manlius, New York.

In the pump, April 13, Theodore Brooks, Rutland, New York.

In the tooth of the cultivator, or harrow, April 13, Waldren Beach, Philadelphia.

In the loom for weaving carpeting, April 14, Horace Baker, New York.

In the mode of raising vessels for repairing, April 15, Ben. Waterhouse, N. York.

In distilling spirits from cider and grain, April 15, Samuel Harwood, 3d, Braintree, New York.

In the horse-mill, April 15, Admiral Warren, Sangerties, New York.

In the boring and tenoning machine, April 17, Admiral Warren, Saugerties, New York.

In the grist mill, April 18, Moody Stockman, Hampton, New Hampshire.

In the cast iron plough, April 19, Thaddeus Fairbanks, Johnsbury, Vermont.

A conicle water wheel, April 19, Boswell Wilcox, Franklin county, Ohio.

In the loom, April 24, Boswel Wilcox, Franklin county, Ohio.

In the vertical saw, for making fret work, April 22, Ebenezer Booth, Southbury, Connecticut.

In the machine for splicing cotton and woollen rolls, April 22, Gardner Barton, Jr. Shaftsbury, Vermont.

In the varnish for furniture, &c. April 22, Marcus Curtis, Troy, New York.

In the mode of picking oakham by machinery, April 24, Ezekial Waterhouse, Gardiner, Maine.

In the gear for mills, &c. April 25, Charles Wortham, Warren county, North Carolina.

In the machine for clearing grain, of rat dung, &c. April 25, Lemuel Lee, and Cornelius Masten, Penn-Yan, Yates county, New York.

In the elevating screw box and cap, of carronades, &c. April 26, Enoch Hidden, New York.

In the machinery for steering vessels, April 25, Stephen G. Clark, and Geo. Stimson, Charleston Mass.

In the construction of rail roads, April 27, Henry Pinkus, and Thos. R. Williams, London, England.

In steam boats, for navigating shallow water, April 28, Benjamin Phillips, N. York.

In the plough, April 28, William Cock, Luzerne Township, Pennsylvania.

In the horizontal spinner, May 2, Bemsle Hunt, and Seth Wheelock, Knox, New York.

In the machine for pressing bricks, May 2, Julius Willerd, Baltimore.

In the vertical jenny for spinning wool, &c. May 2, James Matthews, Schenectady, New York.

In making artificial globes, May 4, William B. Annin, Boston.

In the inclined horse wheel, May 5, Elias Holliday, Schoharie, New York.

In the machine for moulding brick, May 6, David Watson, Fayetteville, Maine.

In the rail way, May 6, Ethan Baldwin, Harrisburgh, Pennsylvania.

In the machine for thrashing grain, May 9, John Shaw, Kennebec county, Maine.

In the machine for relieving water wheels, May 9, Jare Benedict, Fabius, New York.

In covering or platting brick kilns, May 9, Samuel R. Bakewell, Wellsburgh, Virginia.

New Patents Sealed 1826.

To Benjamin Newmarch, of Cheltenham, Esq. for his invented improvements on fire-arms.—Sealed 7th November—6 months.

To Edward Thomason, of Birmingham, in the County of Warwick, goldsmith and silversmith, for his having found out and invented improvements in the construction of medals, tokens, and coins.—9th November—2 months.

To Henry Charles Lacy, of Manchester, in the County Palatine of Lancaster, coach-master, for his new invented apparatus, on which to suspend carriage bodies.—18th November—6 months.

To Bennett Woodcroft, of Manchester, in the County of Lancaster, silk manufacturer, for his having invented or found out, certain improvements in wheels and paddles, for propelling boats and vessels.—18th November—6 months.

METEOROLOGICAL JOURNAL, OCTOBER AND NOVEMBER 1826.

1826.	Thermo. Max	Thermo. Min.	Barometer. Morn.	Barometer. Even.	Wind.	Weather.
OCT.						
26	54	42	29,99	29,45	N.—W.	Fair—clouds
27	53	44	29,38	29,72	W.	Rain $\frac{1}{4}$ inch
28	53	44	29,85	29,94	N. W.—W.	Fair—clear
29	52	45	29,92	29,84	N. W.—S. W.	Ditto—cloudy
30	53	49	29,90	29,84	S.	Cloudy—fog
31	54	44	29,90	29,80	N.—N. W	Fair—clear
NOV.						
1	51	40	29,61	29,50	N. W.	Cloudy—slight showers
2	48	39	29,65	29,74	N.—N. E.	Sun—wind—hail
3	50	43	29,77	29,70	N.	Wind and rain 1-16 inches
4	48	43	29,65	29,74	N.	Ditto—ditto $1\frac{1}{4}$ inch
5	48	43	29,74	29,68	N.	Rain 11-16 inch
6	45	34	29,64	29,72	N.—N. E.	Ditto slight—fog
7	40	31	29,75	29,85	N.	Fair—frost
8	40	31	29,88	29,93	N.	Ditto—ditto
9	42	33	29,97	30,02	N.	Ditto—ditto—cloudy
10	44	33	29,88	29,72	N.—N. W.—W.	Rain $\frac{1}{8}$ inch
11	53	46	29,63	29,50	W. S.—W.	Cloudy—damp
12	51	41	29,50	29,39	N. W.	Fair—clear
13	44	38	29,32	28,82	W.—S. W.	Rain 1-16 inch
14	42	38	28,95	29,18	N.	Cloudy—damp
15	44	36	29,38	29,65	N.	Fair—clear
16	43	34	29,72	29,63	W.—S. W.	Ditto—ditto
17	45	36	29,72	29,98	E.—N. E.	Cloudy—damp
18	45	40	29,98	30,—	N. E.	Ditto—ditto
19	45	43	30,02	30,12	E.	Ditto rain $\frac{1}{4}$ inch
20	46	42	30,18	30,28	N. E.	Ditto—ditto—cloudy
21	46	38	30,32	30,25	N. E.	Cloudy—damp
22	44	39	30,23	30,11	N. E.—N. W.	Ditto
23	49	41	29,97	29,68	N.—N. W.	Ditto—ditto
24	45	34	29,38	29.22	W.	Ditto—ditto—wind
25	38	32	29,—	29,12	W.	Frost—cloudy—fair

Hitchen, Herts. WATSON PERKS.

CELESTIAL PHENOMENA, FOR DECEMBER, 1826.

D.	H.	M.	S.	
1	14	0	0	☽ in conj. with δ in Sagitt.
2	16	0	0	☽ in conj. with β in Capri.
3	0	0	0	♀ Stationary
3	18	0	0	♂ in conj. with ϑ in Cap.
5	0	0	0	☉ before the Clock 9′ 13″.
5	19	13	0	☽ in □ first quarter.
6	0	0	0	☿ Stationary
6	17	41	57	♃'s 1st Satt. will immerge.
10	0	0	0	☉ before the Clock 7′ 2″.
13	8	0	0	☽ in conj. with ι in Taurus.
13	23	32	0	Ecliptic Opposition or ● Full Moon.
14	0	0	0	☾ in conj. with ζ in Taurus
15	0	0	0	☾ in conj. with γ in Gemini
15	0	0	0	☉ before the Clock 4′ 41″.
17	23	0	0	☾ in conj. with 1 α in Cancer.
18	1	0	0	☾ in conj. with 2 α in Cancer.
20	0	0	0	☉ before the clock 2′ 13″
28	8	0	0	☿ in conj. with ρ in Oph.
20	11	0	0	♄ in conj. with μ in Gemini
21	18	35	0	☾ in □ last quarter.
21	19	43	0	☉ enters Capricornus
22	15	57	14	♃'s 1st Sat. will immerge.
23	8	0	0	☾ in conj. with α in Virgo.
23	9	0	0	☾ in conj. with ι in Virgo
24	16	0	0	♀ in conj. with 2 μ in Sagitt
25	6	0	0	☿ in conj. with 1 μ in Sagitt
25	16	0	0	☾ in conj. with κ in Libra
25	20	0	0	☾ in conj. with λ in Libra
26	0	0	0	Clock before the ☉ 47″
26	1	0	0	☾ in conj. with 1 β in Scorpio
26	1	0	0	☾ in conj. with 2 β in Scorpio.
26	4	0	0	☾ in conj. with γ in Scorpio
27	1	0	0	☾ in conj. with ☿ long. 15° in Sag. ☾ lat 1° 58′ N. ☿ lat. 2° 47′ diff. lat. 49′
27	5	0	0	☾ in conj. with ρ in Oph.
27	23	0	7	☾ in conj. with ♀ long. 29° in Sagitt ☾ lat. 3° 8′ N. ♀ lat. 3° 16′ diff. lat. 8
28	10	21	0	Ecliptic conj. or ● New Moon.
29	1	6	0	☽ in conj. with δ in Sagitt
29	17	50	39	♃'s Sat. will immerge
30	0	0	0	Clock before the ☉ 2″ 45″
30	3	0	0	☽ in conj. with β in Cap.

The waxing ☽ moon—the waning moon ☾

otherbithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, OCTOBER AND NOVEMBER, 1826.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low.			Hig.	Low.	High.	Low	
OCT.						NOV.					
26	50	38	29,39	29,34	,225	11	53	42	29,70	29,55	,125
27	54	37	29,70	29,56	,025	12	53	37	29,55	29,43	
28	52	36	30,00	29,94	,225	13	55	29	29,40	29,05	,025
29	55	38	30,03	29,94		14	43	33	29,20	28,96	,475
30	54	44	30,00	29,94		15	43	36	29,68	29,46	,05
31	54	44	29,97	29,92		16	40	27	29,87	29,82	
NOV.						17	48	40	29,94	29,78	,15
1	44	36	29,68	29,50		18	48	34	30,00	29,98	,025
2	47	37	29,70	29,66		19	48	41	30,10	30,06	
3	52	39	29,78	29,70	,075	20	43	41	30,30	30,20	,1
4	48	43	29,77	29,67	,2	21	47	40	30,35	30,33	
5	50	35	29,77	29,70	1,0	22	48	34	30,27	30,16	
6	51	37	29,70	29,66	,325	23	49	40	30,00	29,77	
7	40	28	29,93	29,80		24	46	33	29,43	29,30	,05
8	41	30	29,98	29,93	,025	25	41	28	29,09	29,07	
9	42	29	30,02	30,00							
10	48	27.5	29,88	29,80	,025						

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. of Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

The Russian Government are about to send out two ships of War, Moller and Seniavin, upon another voyage of discovery under the command of Captains Staujikawitch and Litke, their orders are to survey the coast belonging to Russia in the North Pacific; the former taking the North-west coast of America and the Aleutian Islands; and the latter the eastern coast of Asia, Bherings, Straits, &c. The Coast of Kamschatka, the Caroline Islands, the sea of Ochotsk, &c. &c. for the performance of the expedition four years are to be allotted.

Sigr. Angelo Mai, the librarian of the Vatican, has discovered in a codex of the Abbey of St. Colombana, in Bobbio, now preserved in the Royal Library, a valuable work of one of the most celebrated Latin Classics.

A new kind of brake, for dressing flax and hemp has been invented in France, which from its excellent construction it is said, seems likely to supersede the instruments now in use for that purpose, the inventor is a M. Laforest.

A mine of platinum has been discovered in Colombia. The supply of this metal heretofore has been from the Ural Mountains in Russia, and the washing of various alluvial soils.

Mr. George Cooke, has announced for publication on December 1st, the First part of London and its Vicinity to the extent of about twenty miles, to be engraved by himself from new Drawings by able Artists.

This work will embrace every interesting feature of the great Metropolis, its Public Buildings, Markets, Principal Streets, Inns of Court, and of the surrounding Towns and Villages. The shipping and craft on the Thames will be introduced in all their varieties and purposes, and in their proper places and views.

The work will be monthly and the size imperial 8vo.

The *Chronicles of London Bridge*, which have been so long in preparation, are now announced to be published in the course of next month. This work will comprise a complete history of that ancient Edifice, from its earliest mention in the English Annals, down to the commencement of the new Structure, in 1825; of the laying the first stone of which, the only circumstantial and accurate account will be subjoined: and its illustrations will consist of fifty-five highly-finished engravings on wood, by the first Artists.

Mr. Faraday has in the press a work, in one octavo volume to be entitled Chemical Manipulation, containing instructions to students in chemistry, relative to the methods of performing experiments, either of demonstration or research, with accuracy and success. The work is to be illustrated with numerous engravings on wood.

Among the discoveries that have been made at Brescia, an account of which has been published by M. Vantini, is that of an ancient Ionic capital, the only one ever yet found which has the four angular volutes without any cousinet.

In the antiquities of Athens by Stuart, there is nothing like it, M. Vantini attributes it to the time of the Romans.

Mr. Jennings is about to resume the publication of views of Hanoverian and Saxon Scenery, which was interrupted by unavoidable circumstances after the appearance of only one number. If proceeded with by the same talent as the first, it will be as splendid a work as ever was given to the world.

LONDON:
JOSEPH SHACKELL, PRINTER, KIRBY STREET, HATTON GARDEN.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. LXXV.

Recent Patents.

To FRANCIS MOLINEUX, *of Stoke St. Mary, in the County of Somerset, Gentleman, for having Invented or found out an Improvement in Machinery, for Spinning and Twisting Silk and Wool, and for Roving, Spinning, and Twisting Flax, Hemp, Cotton and other fibrous substances.*

[Sealed 23rd May, 1826.]

THIS invention is a peculiarly constructed bobbin and carriage, adapted to spinning machinery, by the employment of which the ordinary flyer is dispensed with, and the yarn conducted to the bobbin in a straight line, avoiding the irregular and oblique tension, which takes place when the yarn is passed through the arm of a flyer, as in the usual operation of spinning.

The bobbin instead of riding upon a straight vertical

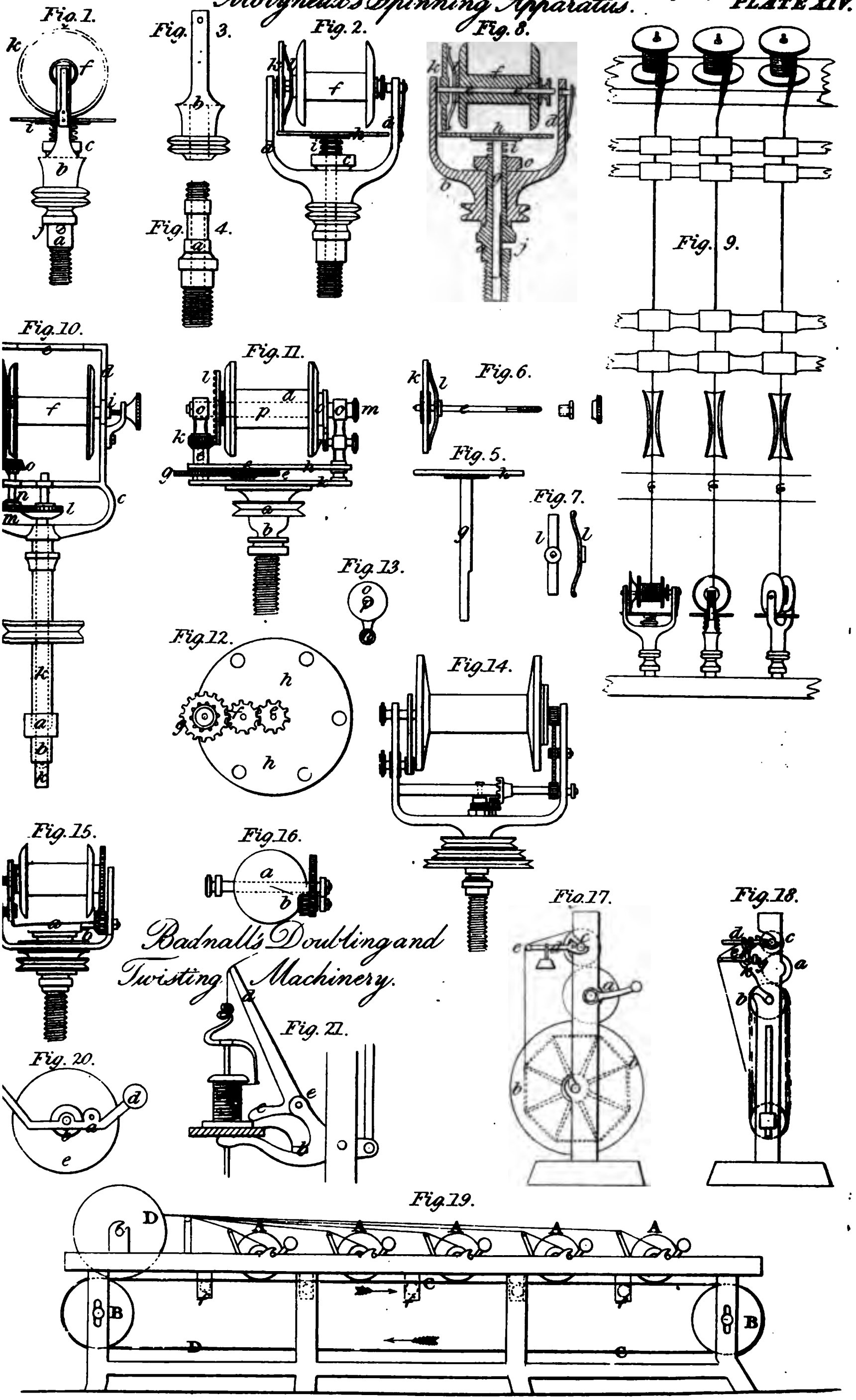
spindle, is placed horizontally, upon an axle bearing in a carriage, having a whirl attached to it, and is spun round in a horizontal direction, for the purpose of giving a regular twist to the yarn or filiaments operated upon, which is kept straight while twisting, and is drawn with uniform tension.

There is affixed to the axle of the bobbin a friction-wheel, the periphery of which, runs round (as the carriage revolves) upon a stationary plate, and causes the bobbin with its axle, to turn slowly by the friction of the wheel upon the plate, and to take up or coil the thread as it becomes spun; or this may be effected by the employment of bevelled geer, or bevelled friction-wheels, or by several other variations of the same principle.

Plate XIV, fig. 1 and 2, are representations of the bobbin and carriage, with the whirl in different positions. Fig. 3, is the carriage and whirl as it would appear sideways, when detached from the stem upon which it is to turn; fig. 4, is the stem (made hollow, as shewn by the dotted lines.) This is intended to be screwed or otherwise fixed into the rail of the spinning frame; fig. 5, is a detached view of the friction-plate with its pin; fig. 6, is the horizontal shaft or axle of the bobbin, having the friction-wheel affixed to it, which is to run round upon the friction-plate, and also the latteral spring designed to bear against the end of the bobbin, for the purpose of holding it upon its axle, with a certain degree of tightness, by the elastic force exerted between the collar and the wheel, and which contrivance tempers or allows the bobbin to accommodate its taking up power to the increasing diameter as it fills, they being always equal. This latteral spring is seen detached in two views at fig. 7.

The bobbin with its wheel and latteral spring is shewn

VOL. XII. *Molyneux's Spinning Apparatus.* PLATE XIV.



W. Newton del.t 1st Jan.y 1827. S. Bellin.

in section upon its horizontal axle, at fig. 8, and the mode of tightening it up against the latteral spring is there seen to be by means of a collar and screw-nut, which are represented detached in fig. 6.

Any number of the stems *a*, fig. 4, are to be fixed into the rail in front of the spinning frame, (as represented in the partial view of a spinning machine, fig. 9,) and upon each of these stems, is to be placed one of the carriages with the whirl *b*, (as fig. 3,) which is there confined to the stem, by a nut *c*, allowing it to revolve freely. The upper part of the whirl *b*, is formed with bent arms, *d, d*, constituting a carriage for the axle *e, e*, of the bobbin *f*, to bear in. The pin *g*, of the friction-plate *h*, is next inserted in the hollow stem *a*, having a worm or helical spring *i*, coiled round it, for the purpose of pressing the plate *h*, up against the periphery of the wheel *k*, upon the axle of the bobbin, in order to produce the necessary friction, and which plate *h*, is prevented from revolving, by the end of a small screw *j*, in a grove or slot, in the side of the pin *g*.

The bobbin *f*, with the wheel *k*, and latteral spring *l*, fixed upon the axle *e, e*, in the manner before described, is now to be placed in the carriage or arms *d, d*, of the whirl *b*, by inserting the pivot, or centre at the wheel end of the axle into a small recess in the arm, and allowing the socket attached to the spring to embrace the pivot at the reverse end, as shewn more evidently in figs. 1 and 8, in the latter of which, the spring is seen drawn back, and the pivot released from the cap.

The bobbin thus mounted, is with its carriage now turned round rapidly in a horizontal direction by means of a cord from a rotatory drum passing round its whirl, in the same way that spindles are usually actuated in ordinary spinning machines.

The filaments of wool, cotton, flax, silk, or any other fibrous material intended to be spun being prepared, as in the ordinary way, are to be brought down in a direct line, and attached to the barrel of the bobbin. The whirl, carriage, and bobbin, are then set in motion by the band from the rotatory drum as usual, when the filaments will be twisted into a yarn or thread, and the bobbin being at the same time made to turn slowly upon its axle, by means of the wheel and friction-plate, as before explained, the thread thus spun will be progressively taken up, that is, coiled round the bobbin. As a fresh supply of material is constantly given out from the delivering rollers, the filaments will be twisted, and the threads taken up on the bobbin without drawing them out of a straight line, consequently the tension will be uniform, throughout the length of thread operated upon, which is not the case in the employment of a flyer, where the thread in taking up is drawn nearly at right angles to that direction in which it was twisted or spun.

In some cases, it is proposed to effect the taking up, that is, the coiling of the threads or rovings upon the bobbin by means of gear (toothed-wheels) in preference to the friction-wheel and plate, above alluded to, one method of doing which, is shewn in fig. 10; *a*, is a socket or cup to be fixed into the rail of the spinning machine, for the lower end of the tube *b*, to which the whirl *c*, and carriage *d*, is attached, to bear and revolve in. The upper end of the carriage is formed into an elliptical ring *e*, in order to allow the thread or yarn, to pass from the guide rollers down to the bobbin in a straight line; *f*, is the bobbin as before, mounted upon an horizontal axle; *g*, is a bevelled tooth-wheel affixed to the axle; and *h*, is a spring and collar pressing between the wheel *g*, and the bobbin *f*, for the purpose of holding the bobbin upon

the axle with some degree of tension, when the socket *i*, in which the pivot of the axle turns, is screwed up to its bearing; *k*, *k*, is a central stem, shewn by dots, passing through the cup *a*, and the tube *b*, which stem is intended to be stationary in the rail of the spinning machine for the apparatus to revolve upon. At the upper part of the stem a toothed-pinion *l*, is affixed, which is intended to take into a toothed-wheel *m*, this last mentioned wheel is attached to a perpendicular shaft *n*, *n*, mounted in the frame or carriage *d*, at the top of which shaft, there is a bevelled pinion *o*, taking into the bevelled wheel *g*, above-mentioned. By this arrangement it will be seen that as the whirl and carriage with the bobbin revolves in a horizontal direction, the stationary pinion *l*, causes the wheel *m*, to turn, and this turning of the bevelled-pinion *o*, drives the bevelled-wheel *g*, and also the bobbin round in a vertical direction, causing it to take up, or coil the yarn or thread as it becomes spun. The quantity taken up that is, coiled upon the bobbin, will depend upon the comparative diameters of the wheels and pinions, which is well understood by mechanics, and must of course be varied according to the quality of the article operated upon. A similar effect may also be produced by employing wheels, having small peripheries covered with cloth or some such material, instead of toothed-wheels, in which case the friction of the parts coming into contact will cause the wheels to turn, and effect the taking up upon the same principle as described above.

Another method of taking up, by means of gear, is exhibited at fig. 11, in which *a*, is the wheel turning upon the fixed stem *b*; *c*, *c*, *c*, is the carriage upon which the bobbin *d*, bears, and revolves in the manner before described. Attached to the top of the stem *b*, is a fixed pinion *e*, which takes into an intermediate wheel *f*, and

this actuates another toothed-wheel *g*; these wheels being enclosed between a pair of circular plates *h*, *h*, which arrangement is shewn more perfectly in the horizontal view, fig. 12. The wheel *g*, is affixed to a cylindrical tube *i*, that slides round upon the upright part of the carriage, and at the top of this tube a pinion *k*, is affixed, which takes into a faced wheel *l*. The faced wheel is mounted upon a short axle, let into a hole in the standard *c*, and has a female screw, which receives the end of the axle of the bobbin. At the reverse side of the carriage, the contrivance for tempering is attached, which consists of a screw *m*, having an arm *n*, with a circular washer *o*, as shewn in the detached fig. 13. The axle *p*, shewn by dots being passed through the washer and bobbin (having cloth rollers between) screws into the socket as beforesaid. The tempering may be adjusted to any degree of friction by turning the regulating screw *m*, for the purpose of pressing up the bobbin to the face-wheel. A third mode of taking up, by means of gear, is shewn at fig. 14. The parts of the bobbin and carriage, and the tempering being the same as before described. In this instance, the manner in which the wheels and pinions take into each other to effect the taking up will be sufficiently understood by an inspection of the figure. A fourth mode of taking up, by means of gear, is shewn at figs. 15 and 16; where, instead of the fixed pinion, a circular inclined plane *a*, is made to take into the side of a bevelled-toothed pinion *b*, at the back of which is a cylindrical pinion, taking into a wheel above upon the axle of the bobbin, much in the same way as described in the preceding figures.

The same effect may also be produced by adapting pullies and bands instead of the toothed-wheels last described; the bands passing from one pulley to the

other, so as to connect them, and cause them to revolve, under a precisely similar arrangement of the parts.

From the employment of any of the above contrivances a more delicate material may be operated upon, and a much finer thread produced than by any other description of spinning or machinery hitherto known; indeed a machine with these improved bobbins and carriages adapted, is capable of effecting all the delicacy of the finest hand-spinning.

The patentee says in conclusion, "I have described the filaments, under the operation of being spun, as descending in a perpendicular direction, or nearly so, to the bobbin, which is placed upon a horizontal axle, but I do not mean to confine myself to that particular position, as the spinning or twisting may be performed either in a vertical, horizontal, or oblique direction; and also the bobbin may be adapted either to take up, or by altering its situation, to deliver, as occasion may require, in the formation of threads or yarn, or rovings of whatever material."

He lastly observes, "I wish it to be understood that the important feature of my invention, and that which I particularly claim, consists in mounting the bobbins of a spinning-frame upon axles being at or nearly at right angles to the direction of the threads or yarn operated upon, and adapting a wheel upon each said axle, or one edge of the bobbin to a friction-plate or gear, or friction-wheels, or pullies and bands, in order to turn the bobbin upon the axis in one direction, as it is spun round in another direction, for the purpose of performing the spinning, and taking up by one operation, and which said contrivance is, to the best of my knowledge and belief, entirely new."

[*Inrolled November*, 1826.]

To William Duesbury, *of Bosel, in the County of Derby, Colour Manufacturer, for his having discovered a mode of Preparing or Manufacturing of a White from the impure native Sulphate of Barytes.*

[Sealed 29th September, 1825.]

The object of this invention, appears to be the production of a material intended to be employed as a substitute for white lead in painting, which material, when prepared according to the process of the patentee, is found not to be susceptible of decomposition, or of changing its hue in situations which are exposed to damp or sulphurous effluvia. It is, however, more particularly designed for water colour than for oil, and when employed on flatted or distempered walls, and as the ground washes, or in the patterns of printed paper hangings, it is found to be a *constant white*, that is, to retain its snowy hue unimpaired and unaffected by any chemical action, to which a humid atmosphere might expose it.

The patentee takes the impure native sulphate of barytes, or what is commonly known by the names of cawk, heavy spar, ponderous earth, terra ponderosa, vitriolata, marmor metalicum, &c. which materials are to be found in several parts of this country in large quantities.

These are to be picked and washed as clean as may be from impurities, and then ground or otherwise reduced to minute particles in a pan or colour-mill or other proper apparatus with the addition of water. The cawk, so ground is then to be transfered into a leaden cistern or boiler, and more water added to it.

The cistern or boiler should be supported upon iron plates, having a proper fire-place and flues underneath,

constructed in brick-work, as usual, in order that the contents may be brought to a boiling heat. To the cawk thus boiled, a quantity of sulphuric acid is to be added, the proportion of which to the cawk, must depend upon the quantity of iron supposed to be contained in it, but this, however, may be ascertained, by taking portions of the cawk out from time to time during the boiling, and examining it, in order to discover whether it has attained the proper degree of whiteness; and if not more acid must be added, and the boiling be continued, until the desired colour be produced, the materials being frequently stirred during the process, to prevent their adhering to the bottom of the boiler. The prepared cawk must now be repeatedly washed with water, until the solution of iron is removed from it, and then dried in a stove, or by any other convenient process, to fit it for use. Under some circumstances the patentee employs other acids; and instead of sulphuric, or compounds of acids with such basis as will act upon iron, with the intention of dissolving the iron, but in general he prefers to use the sulphuric acid in the manner above described.

In the event of employing other acids, or such other compounds as would act chemically upon the leaden boiler, vessels of glass or earthenware properly glazed, or of other materials not liable to be attacked or corroded by the said acids, or their compounds, must be used instead of the leaden boiler. It is stated that copper boilers may be employed instead of leaden ones, even when using the sulphuric acid to dissolve the iron, but the preference is given to those boilers which are formed of lead.

The patentee says, in conclusion, "I do not mean or intend hereby to claim, as my invention, the apparatus herein described, but solely to limit my claim to the puri-

fication of the impure native sulphate of barytes, or by what other name it may be called, from its colouring matters, by the action of acids or their compounds, and rendering the same equally fit for those purposes to which white sulphate of barytes is usually or may be applied in the arts."

[*Inrolled March* 1825.]

To WILLIAM HENRY JAMES, *of Coburg Place, Winson Green, near Birmingham, in the County of Warwick, Engineer, for his Invention of certain Improvements in the construction of Steam Boilers for Steam Engines.*

[Sealed 14th June, 1825.]

THERE are two principle objects proposed by the patentee in this invention, the first of which, is to expose a very extended surface of boiler to the action of the fire, in order that a great quantity of steam may be rapidly generated in a comparatively small vessel; and secondly, to prevent the dangerous consequences that frequently attend explosions in the event of any part of the boiler becoming fractured; which is to be effected by constructing the boiler of many distinct chambers or vessels, combined together, in order that any fracture in one part of the boiler, (that is in one of the distinct vessels) may not communicate to the other parts of the boiler, so as to rend the whole, and by which contrivance only a small portion of steam and water, could be discharged, in case any such accidental explosion should take place.

James's Steam Boiler.

Fig. 1.

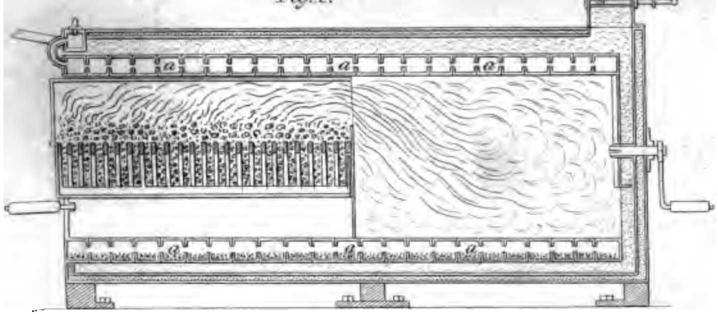
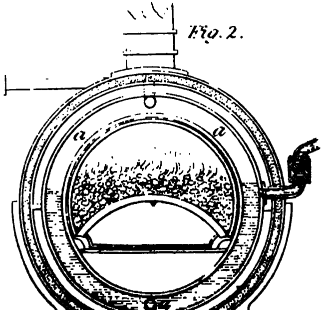


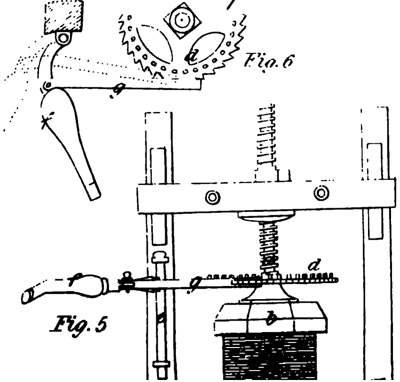
Fig. 2.



Dunn's Impd. Press.

Fig. 6

Fig. 5



Burstall & Hill's Steam Carriage.

Fig. 3.

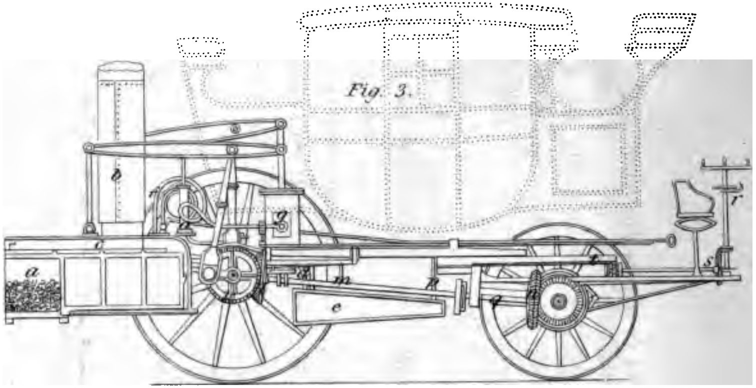
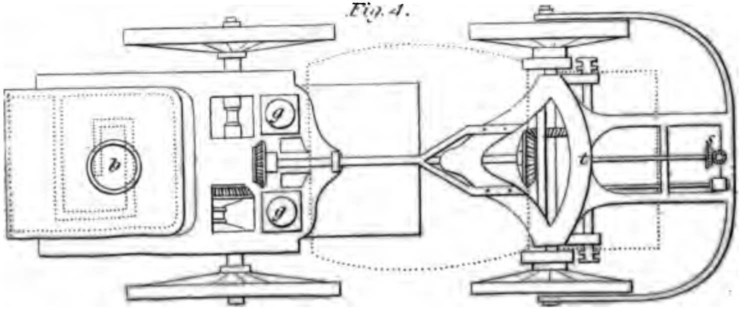


Fig. 4.



This boiler appears to be designed principally for a loco-motive engine, or steam carriage, and is intended to be combined with other improvements relative to those machines, for which the same inventor has previously obtained patents (see our IXth and Xth volume.) It is expected from very satisfactory experiments which have been recently made by the patentee, that he will shortly exhibit his invention in operation, we shall then take the earliest opportunity of communicating the results to our readers, and also our own opinions as to its novelty and practical usefulness.

The patentee states, that this improvement in the construction of boilers for steam engines, consist, "first, in forming the said boilers by combining a series of annular tubes, or a series of ring formed chambers; which chambers communicate with each other by apertures running through the whole series, in order to allow the water and the steam to flow freely from end to end of the cylindrical vessel so formed by the combined tubes or chambers; and which vessel, has a furnace adapted within it for the purpose of heating the water, and the steam contained in the annular tubes or chambers. Secondly, In a contrivance by which the boiler may be made to revolve, or to oscillate for the purpose of cleansing its interior from sediment or incrustation, caused by the boiling of the water.

Plate XV, fig. 1, represents a section cut through the boiler lengthwise, and fig. 2, is a transverse section, the similar letters referring to the same parts in both figures; *a, a, a, a*, are the annular tubes or ring formed chambers, made of metal, by rolling, welding, or casting, and which are to be united by soldering, bolting, riveting or otherwise, so as to form externally the appearance of one cylindrical vessel. Through the series of annular tubes or chambers so united, apertures are to be made lengthwise

along the top and bottom, for the purpose of obtaining free passages by which the water and steam may flow, thereby forming the whole series of annular chambers into one vessel of capacity, which is to be occupied with water rather more than half way up.

A furnace is to be inserted within the cylinder, supported upon suitable bearings, and capable of sliding in and out, which with its flue occupies the whole interior of the cylinder of rings, and the flame and heated vapour arising from the furnace in passing from thence to the chimney, enters the jacket and embraces the external surface of the combined ring formed chambers or cylindrical vessel. By these means the water in the lower parts of the vessel is made to boil, and the steam generated therefrom rising into the upper parts of the vessel, becomes greatly increased in its elastic force by the immediate action of the fire, and the jacket is coated with pulverised charcoal, or other imperfect conductor of heat, for the purpose of preventing its radiation.

As it may be found that the water in boiling deposits earthy matter, which adheres as a crust to the interior of the vessel, it is proposed to place at the bottom part of each chamber a few shots, marbles, or other loose articles, in order to clean the interior of the boiler by friction, and to assist this object, it is contrived that the boiler shall be capable of revolving or vibrating. When it is wished to clean the boiler, the furnace must be withdrawn, and the steam and water pipes unscrewed, then (having nearly filled the chamber with water) by manual labour applied to the handles, the boiler must be caused to revolve, or to vibrate to and fro upon its axle, and guide-rollers, when by the friction of the shots above described, the incrustation or sediment, will be broken up and discharged, with the water employed in washing it.

It has been found desirable to adapt a revolving cock, to give such supplies of water to the boiler, through the supply-pipe, as may be found necessary. This is proposed to be actuated by a movement from the engine as is usually done. By this particular construction of cock, when even the water in the boiler is above the desired level, it flows up to the aperture of the cock and prevents a further supply from passing; but when the water in the boiler is below its desired level, then a supply is delivered every time that the cock revolves. The steam rising into the upper parts of the chamber of the boiler escapes through the bent-tube, and proceeds by the pipe to the engine.

The patentee says, in conclusion, "I wish it to be understood that I do not limit my claim of invention to the precise forms exhibited in the figures of the parts of which this my improved boiler is constructed, as the tubes or chambers may be elliptical, or of other forms slightly deviating from a circle. Neither do I mean to limit myself to such tubes as are square in their sectional figure: as round or other formed tubes united together would answer the purpose. And although I prefer the construction and forms exhibited in the figures, yet I should consider the above variation to be imitations of my invention, in case a boiler for a steam-engine was constructed, by combining a series of annular tubes or ring-formed chambers, with passages extending through the whole series, for the purpose of allowing the steam and water to pass freely from one to the other. And, lastly, I claim the manner of mounting such boiler, to be turned round or made to vibrate, in order to clean their internal surfaces from sediment or incrustation."

[*Inrolled December*, 1825.]

To Timothy Burstall, *late of Bankside, in the County of Surrey, but now of Leith Saw-mills, near Edinborough; and* John Hill, *late of Greenwich, in the County of Kent, but now of Leith aforesaid, Engineers, for their invention of a loco-motive or Steam Carriage, for the conveyance of mails, passengers, and goods.*

[Sealed 3rd February, 1824.]

This invention, consists first, in an improved construction and combination of machinery, for propelling a carriage upon ordinary roads, many parts of which machinery are not new, separately considered, but are claimed in their peculiar combination, as applied to the purposes of a loco-motive engine in the manner exhibited in the accompanying figures; secondly, in an improved construction of boiler or generator, for producing the steam, by which the engine is to be worked, and in which construction portability is particularly considered; thirdly, in an improved method of supplying the generator with a suitable quantity of water, for the production of the required steam.

Plate XV, fig. 3, is a side view of the steam carriage, some of the parts being removed or shewn in section, and fig. 4, is a horizontal view or representation of the apparatus, as seen when looking down upon it, the coach-body being removed; *a*, is the furnace, attached by suitable fastenings, to the hinder part of the carriage, from whence the flames, smoke, and heated vapour, proceeds through the flue, which is a circuitous passage, under the boiler, epresented by dots, in fig. 4, and at length passes up the chimney *b*. The furnace is proposed to be made of cast iron, and the generator *c*, within, is formed by a flat plate

crossed or divided into compartments by small elevations, or ribs, which separate it into several shallow trays intended to receive the water.

A feed pipe *d*, conducts the water from a reservoir or cistern *e*, under the carriage, into the generator, and several holes being perforated in this pipe, the water is distributed within the generator, in jets or small streams, over the surface of the plate. The heat of the furnace acting against the underside of the plate, causes the water to be evaporated as fast as it flows into the generator, and the steam thus produced, passes off from the generator by the curled pipe *f*, to the working cylinders of the engine.

g, *g*, are the cylinders, with their pistons and rods, the latter of which, are connected to the vibrating beams above. These engines are similar in their construction to ordinary steam engines, the reciprocating power being converted into a rotatory power, and communicated by the crank rods *h*, *h*, to the axle *i*.

Upon the ends of the axle *i*, the two hind running wheels of the carriage are affixed, and are consequently, made to revolve by the rotation of the axle. A bevelled tooth-wheel k, is likewise fastened upon the crank axle, and this taking into a similar bevelled wheel *l*, turns the longitudinal shaft *m*, which by means of the bevelled gear *n*, actuates the front wheels of the carriage.

In order to allow of the several wheels moving occasionally with dissimilar velocities, which is necessary in turning corners, or performing curves in the road, the boxes of the wheels are not fixed on to the axles by square ends and mortices, but fit loosely upon cylindrical ends, and the wheels are locked to the axles by palls, or clicks and ratchets, so that when it is necessary that one wheel

should move faster than the other, the click slides back over the teeth of the ratchet.

The reservoir which supplies the generator with water, is made of metal sufficiently strong and steam-tight to resist an internal pressure equal to that of the generator. It is charged with fresh water at such intervals on the road as may be necessary, according to the quantity evaporated. It has attached to it a pipe, leading from a pair of small condensing air-pumps *o*, the pistons of which, are worked by rods, connected to the vibrating beams of the engine. By means of these pumps, volumes of atmospheric air are constantly injected into the reservoir, and which by pressing upon the surface of the water, cause it to flow continually through the supply pipe into the generator, a cock being placed in the pipe which regulates the supply of water.

The pole or shaft *p*, which connects the action of the hinder parts of the carriage to the front part, is united to the shaft *q*, by a sort of universal joint, which allows of the vibratory actions of the two axles of the running wheels in passing over uneven ground, and there is a contrivance that enables the driver to disengage either of the wheels from the gear, or lock them if he pleases, by the pressure of his foot upon a lever. The axle of the front wheels is enabled to move round horizontally, for the purpose of passing one wheel under the carriage, as in turning, and this is effected by the steering wheel *r*, which is turned by the hands of the conductor, who is seated in front. At the lower part of the shaft to which the steering wheel is affixed, there is a pinion that takes into a bevelled toothed-wheel *s*, and at the reverse end of the shaft to which this toothed-wheel is affixed, there is another pinion, taking into a rack on the under side of the sector *t*. Thus by

turning the steering wheel, the axle of the front wheels is removed from its position of parallelism to the hind axle, and the carriage as it proceeds forward, consequently moves out of the direct line.

There are rods with handles near the front seat, by which the conductor may stop the engine, or close the cocks of the supply pipe or steam pipe in an instant, or regulate the quantity of either. The fuel may be supplied by a feeding hopper, and fluted roller as commonly practised, so as to keep up the steam regularly, without the assistance of a stoker; and an air or blast cylinder, or other blowing apparatus to be worked by the engine, might be usefully employed to urge the fire, and which would tend greatly to diminish the quantity of smoke emitted.

The form of the body of the coach may be varied as fashion or convenience may dictate; and the framing or bed for supporting the machinery may also be constructed in different ways, without affecting the general arrangement of the machinery. The whole of the apparatus is to be mounted upon springs, in order to avoid any derangement of the parts by jolting upon the roads, and the metal pipes for conveying the water and the steam to and from the generator, are bent or curled to allow of some degree of elasticity, that the joints may not be strained by the shaking of the carriage as it travels.

The specific claims of the patentee are as aforesaid:— 1st. "The general arrangement of the whole apparatus, as adapted to a loco-motive engine, or steam-carriage.— 2nd. The peculiar construction of a steam-boiler or generator; and, 3dly, the mode of injecting water from the reservoir to the generator by the pressure of condensed air; observing, nevertheless, that the forms and proportions of the various parts of the machinery may be varied ac-

cording to circumstances, without departing from the intent and object of the invention."

[*Inrolled August* 1825.]

We have delayed the publication of the above in the expectation that the carriage would shortly be exhibited to the public; the inventors have, however, been disappointed, principally, as we are informed, by defects in the workmanship of the boiler; they have, likewise, projected some further improvements, for which they have lately obtained another patent, in describing which, we hope, at no very distant period, to be enabled to speak, from experience, of the practicability and usefulness of the invention.—EDITOR.

To DANIEL DUNN, *of King's Row, Pentonville, in the Parish of St. James's, Clerkenwell, in the County of Middlesex, Manufacturer of Essence of Coffee and Spices, for his Invention of an Improvement or Improvements upon the Screw Press, used in the pressing of Paper, Books, Tobacco, or Bale Goods; and in the expressing of Oils, Extracts, or Tinctures; and for various other purposes in which great pressure is required.*

[Sealed 23rd May, 1826.]

THE object of this improvement in the screw press, is to acquire an additional power of leverage, beyond that which is afforded in the ordinary screw press, where the end of a straight bar of iron, is introduced into a block, and the screw is turned by the simple leverage or power exerted at the reverse end of the bar.

In this improved press, a ratchet-wheel is affixed horizontally to the square end at bottom of the screw, in

place of the square block heretofore occupying that situation, and a compound lever is employed for the purpose of drawing this wheel round, by the end of the lever taking hold of the ratchet-teeth.

Plate XV, fig. 5, shews a front elevation of the press; fig. 6, a horizontal view of the ratchet-wheel and compound lever. The wooden frame-work of the press is to be constructed in the usual way, with the screw *a*, passed through the top rail; *b*, is the platten, and *c*, the bottom board; *d*, is the ratchet-wheel affixed to the square end at the bottom of the screw; *e*, is a perpendicular rod, affixed to the side of the frame, upon which the lever or handle *f*, turns as a fulcruum; *g*, is a straight bar attached at one extremity to the handle, and at the other end taking hold of the ratchet-teeth of the wheel, which is more evidently seen in the horizontal view, fig. 6.

The goods to be pressed represented at *h*, having been placed upon the bottom board *c*, in a pile as usual, the platten is brought down upon them by turning the wheel and screw by hand. It now being necessary to employ power to compress the goods, the handle *f*, is slidden up towards the top of the rod *e*, and is supported in that situation by a small pin passed through one of the holes in the rod *e*. The bar is now attached to the arm of the handle *f*, by a pin passed through at the joint, and the reverse end of the bar being brought against the periphery of the ratchet-wheel *d*, one of the teeth of the ratchet passes into a mortice hole, at the end of the bar.

It will now be seen that by drawing the handle back into the situation shewn by dots, in fig. 6, the ratchet-wheel will be drawn round, and consequently, the screw brought down; the end of the bar must then be withdrawn from the ratchet-wheel, and with the handle brought forward again, so as to take hold of the teeth of the ratchet-

wheel in another part of its periphery, and thus continuing the operation (lowering the handle as the screw descends,) the platten is at length brought down, and the goods pressed to that state of compactness required.

In order to unscrew the press, a counter operation is to be performed, the end of the bar *g*, is to be removed from the ratchet-teeth, and placed against the studs which stand up on the top side of the ratchet-wheel, when by pulling the handle the reverse way to that already described, the end of the bar will force the wheel round in the opposite direction, and raise the screw.

There are several holes in the arm of the handle *f*, at various distances from the fulcruum, into which, the connecting pin, or joint of the bar *g*, may be introduced, and hence the power of the compound lever increased or diminished, as may be required.

This improved screw press is designed to be employed in the several operations of pressing paper, cloths, expressing oils, or tinctures, and various other articles, where a great pressure is required, and the several parts of the press may be made of wood, iron, brass, or any other suitable material.

[*Inrolled November*, 1826.]

To RICHARD BADNALL, *the younger, of Leek, in the County of Stafford, Silk Manufacturer, for his Invention of certain Improvements in Winding, Doubling, Spinning, Throwing, and Twisting of Silk, Wool, Cotton, or any other fibrous substances.*

[Sealed 10th February 1825.]

THE first part of these improvements, applies to the

winding of silk, and consists in a contrivance, by which the tension of the silk, as it is drawn from the swift or skein, on to the bobbin, is occasionally relieved; the second, is a mode of accommodating the tension to the increasing circumference of the bobbin; the third, is a method of combining several bobbins with the above improvements in one frame, for the purpose of doubling or uniting several filaments of silk together; and fourthly, a contrivance for accommodating and relieving the tension of the thread, as it is coiled upon the bobbin by the flyer, in a spinning machine.

Plate XIV, fig. 7, is a side view of a machine, by means of which, filaments of silk are drawn from a swift, and wound upon a bobbin. The actuating power is applied by means of a winch or otherwise, to the roller *a*, which being made to revolve, causes the wheel *b*, to revolve also, by the friction of their two peripheries. This wheel *b*, is affixed to the axle of the swift, and therefore, as it turns carries the swift with it, and causes the filament of silk to be given out, which is passed upwards to the bobbin. Upon the axle of the bobbin, is the wheel *c*, the pivots of which, are dropped loosely into recesses in the side standards, and the periphery of this wheel, bearing also upon the roller *a*, turns by friction, moving with a small degree of accelerated velocity, for the purpose of drawing the filaments of silk off the swift, with some considerable tension.

A small lever *d*, is attached by a fulcruum pin to the side of the standard, the shorter arm of the lever bearing against the under part of the axle of the bobbin, and the longer arm carrying a wire, over which, the filament of silk passes, on its way from the swift to the bobbin: the weight of the bobbin being nicely balanced by a weight sliding upon the lever.

It will now be seen that as the bobbin at *c*, revolves

faster than the swift, the silk will be drawn with considerable tension over the wire *e*, at the end of the lever *d*, and this tension, causing the longer arm of the lever *d*, to be depressed, will at the same time, raise the shorter arm of the lever, and lift the bobbin from its contact with the roller *a*, when it will no longer revolve upon its axis, but remaining stationary, allow the swift to give out so much of the silk, as shall cause the filament to hang loosely, and consequently the lever to resume its former situation, when the wheel at the end of the bobbin coming again in contact with the roller *a*, will be made to revolve as before, winding the silk upon its periphery.

In this way, the winding of the silk upon the bobbin, will always be performed with considerable tension, but, when the tension becomes so great as to endanger the breaking of the filament or thread, then the lever raises the bobbin from the friction-roller, and causes the tension to be relieved, and as the process of winding goes on this relief, is at all times brought into operation; when the tension of the silk requires it, and this is the simplest form in which the invention can be applied.

In order to afford a means of compensating for the increasing weight of the bobbin, as the silk continues winding upon it, another lever is introduced in connection with the foregoing, shewn at fig. 18, which is the side view of a winding-machine, similarly constructed to that in the former figure; but in this instance, the skein of silk is stretched upon two small barrels, called rise-heads, instead of the swift before described. *a*, is the friction-roller, turned by a winch for the purpose of giving rotatory motion to the wheel and bobbin *c*, and also to the upper barrel or rise-head *b*. When the filaments of silk adhere together, or are what is called sticking, it is preferred to distend the skein upon the barrels or

rise-heads instead of the swift, because in that situation the silk is more shaken, and the filaments more easily separated.

The lever *d*, supporting the end of the axle of the bobbin as described before, has in this instance a balance weight sliding upon it in a different manner to that in the former figure; *e, f, g*, is an auxiliary lever, with three arms turning upon a fulcrum at *h*. At the end *e*, is the wire over which the filament of silk passes from the skein to the bobbin; at *f*, the lever is forked, for the purpose of embracing the balance-weight of the upper lever; and at *g*, there is another weight to balance the three-armed lever. When the bobbin, by the accumulation of the silk wound upon it becomes increased in weight, the ordinary tension of the silk is not sufficient to raise the lever *d*, as in the former contrivance; it is therefore necessary to slide the balance-weight along the lever in order to poise it. This is done by the tension of the silk bearing against the wire at the end *e*, of the auxiliary lever, and by depressing it, causing the forked end *f*, to move the weight along the upper lever, so as to overbalance the loaded bobbin, and to lift it from the periphery of the friction roller, until the ordinary tension of the thread is restored.

The employment of this contrivance, for winding silk upon bobbins, would be of little use where it not applicable to a doubling machine. The patentee therefore proposes to adapt several of these compensating levers, in the form and manner shewn at fig. 19, which is a side view of a machine carrying five bobbins A, A, A, the filaments or threads from which are combined, or doubled upon a reel at the end.

The bobbins are each mounted upon a carriage, or compensating lever, shewn detached at fig. 20; *a*, is the

situation of the axle or pivots upon which the carriage is suspended in bearings in the side-rails of the frame-work of the machine, as at fig. 19, where five of these carriages or compensating levers, with their bobbins, are shewn in operation. The bobbin is placed in the carriage upon an axle at *b*, and at the end of the projecting arm of the carriage marked *c*, a wire is situate, over which, the filament of silk is to pass from the bobbin to the reel, in the manner described in the former figures. At the reverse end of the carriage a weight *d*, is affixed, for the purpose of balancing the carriage, bobbin, &c. upon its pivots.

B, B, are two drums or rollers, suspended by their axles in the legs of the frame-work, over which drums an endless webb C, C, C, is distended. Upon this web the periphery of the wheel on the axle of the reel D, is intended to bear; consequently, when the drums B, B, are made to revolve by means of any suitable rotatory power, the endless web traverses in the direction of the arrow, and causes the reel to turn upon its axis, and to draw the filaments of silk from the several bobbins, by which means they are combined, or what is called doubled upon the reel.

At the end of the axle of each bobbin, there is a friction wheel *e*, which is intended to be brought into contact with the endless web C, in order that the web as it traverses may cause the wheel *e*, to revolve by its friction, and the bobbin to give out its filament.

Now it is intended that the weight *d*, shall rather more than counterpoize the bobbin and carriage, and therefore that the friction-wheel *e*, shall be lifted up from the endless web by the weight, but when by the rotation of the reel, the filament of silk is drawn from the bobbin with considerable tension, the pressure which the silk exerts upon the wire, at the end of the arm C, will depress that

end of the carriage, and cause the friction-wheel to come in contact with the endless web, and consequently the bobbin to be turned round, and the filament of silk given out. In order to prevent the upper surface of the endless web from swagging, and keep it up against the periphery of the friction-wheels of the bobbins, several small rollers *f*, *f*, *f*, are introduced in the machine over which the endless web passes.

It will now be seen that by this construction of compensating levers, and the mode of combining several of them in one machine, the filaments of silk may be uniformly drawn from the several bobbins, and wound upon the reel, and that whenever the bobbins, by too quick a movement give out too much of the filament, so that it shall hang loosely, the counterpoize weight will raise the friction-wheel, from the traversing web, and the rotation of the bobbin immediately cease and remain quiesent, until by the revolution of the reel, the filaments become drawn tight, when the pressure of the silk upon the wire, will bring down the friction-wheel into contact with the endless web, and thereby cause the bobbin again to revolve and give out the filaments.

In order to apply the principle of the compensating lever to spinning and twisting silk, cotton, wool, &c., the patentee has adapted it in the manner shewn at fig. 21; *a*, is the bobbin and flyer mounted upon its spindle, as usual, and bearing upon the copping-rail, which is made to ascend and descend, for the purpose of laying the yarns uniformly upon the bobbing, by means of a bent lever *b*, connected to the rod behind, and this is actuated in the manner usually practised in spinning machinery so constructed. The improved compensating lever is shewn at *c*, *d*, attached to the bent lever *b*, and turning on a fulcruum pin at *e*. The friction of the end of the bobbin

upon the copping-rail is the ordinary mode of retarding its rotation, while the rapidly revolving flyer winds the spun thread or yarn upon the bobbin; but in this case, the end of the shorter arm *c*, of the compensating lever, is intended to bear upon the bobbin, for the purpose of retarding its rotation, while the flyer coils the spun thread or yarn upon the bobbin. In the event of the thread or yarn being drawn with too much tension, its pressure against the longer arm *d*, of the compensating lever, will cause that arm to recede, and consequently the shorter arm to be raised from the bobbin, when the friction being removed the bobbin will revolve, and the taking up or coiling of the thread or yarn cease, until by the falling of the lever again, the operation will go on as before.

This improved compensating lever, in any form in which it may be made to act, upon the principle above described, is claimed for the purposes of winding, doubling, spinning, throwing, or twisting of silk, wool, cotton, or any other fibrous substances.

[*Inrolled August*, 1825.]

To Francis Melville, *of Argyle Street, in the City of Glasgow, Piano-forte maker, for his invention of an improved method of securing that description of small Piano-fortes, commonly called Square Piano-fortes, from the injuries to which they are liable from the tension of the strings.*

[Sealed January 18th, 1825.]

The intention of the patentee, is to produce that sort of firm bracing in the interior of square piano-fortes, that

the framing shall not be capable of warping, or being drawn out of its primitive form, by the great tension of the wires. For this purpose, there are firmly fixed by screws, or otherwise, on the rest board or blocks into which the pins are set that stretch the wires or strings, metallic brackets, with a circular hole in each, to receive the end of a strong metallic rod, which is intended to form a substantial resistance against the tension of the strings, and by that means, prevent the frame-work from being drawn out of its original shape.

The brackets are simply right angled pieces of metal, firmly screwed to the rest boards of the instrument, the upright part of each bracket, has a circular hole near its top, sufficiently high to be above the wires. The rods are formed with spherical ends, which are let into the circular holes of the brackets, and by their resistance, prevent the wood work from giving way, whatever may be the force with which the wires may be drawn.

Various contrivances have been proposed, for giving stability to the interior of piano-fortes, in order to resist the tension of the wires, (see Thom and Allen's patent, Vol. I, page 184,) the particular novelty therefore, of the present invention, is the peculiar mode of attaching the tension rods, by means of spherical ends let into circular holes in the brackets.

[*Inrolled March,* 1825.]

To William Mayhew, *of Union Street, Southwark, in the County of Surrey, and* William White, *of Cheapside, in the City of London, Hat Manufacturers, for their new invented Improvement in the Manufacture of Hats.*

[Sealed 7th February, 1826.]

The patentees observe that there are two objections to what are called silk hats as usually made, viz. that the hardness of the body, or shell of the hat, over which the silk covering is laid frequently hurts the head of the wearer; and the edge of the crown being much exposed to blows, the silk nap soon becomes worn off, and exposes the cotton foundation of the covering, which being a vegetable material is not capable of receiving so good a dye as the silk, and the hat immediately looks shabby. To remedy these defects therefore is the object of the present patent.

The hat body is to be made of stuff or wool as usual, and the unyeilding stiffness of the inner part round the brim, is proposed to be relieved by attaching a coating of beaver or fur, on the under side of the brim, which will render the hat soft and pliable. Round the edge of the tip or crown, a quantity of what is called stop wool is to be attached, by the ordinary operation of bowing, which will render the edge soft and elastic. The hat is afterwards to be dyed of a good black colour, both inside and outside. And then being properly stiffened and blocked, is ready for the covering of silk.

The plush employed for the covering of hats is a raised pile or nap of silk woven upon a cotton foundation; and the cotton being incapable of receiving so good a dye as the silk, presents a disagreeable brown appearance when

the silk nap is worn off. The patentees therefore propose to make the foundation of the plush, which shall be employed for covering the tip or top of the crown, entirely of silk as well as the pile: and by that means cause the edges of the hat to preserve their colour, in the event of the nap being injured by blows, or worn off: which indeed is not very likely to take place in these improved hats, the edge of the crown being padded as above described, with a soft elastic material.

[*Inrolled August*, 1826.]

To Benjamin Lowe, *of Birmingham, in the County of Warwick, Gilt Toy Manufacturer, for his Invention of certain Improvements in useful and ornamental dressing pins.*

[Sealed 14th July, 1826.]

These improved pins are made with ornamental heads, the stem being of gold or any other metal, and the heads formed by the attachment of a jewel, bead, or any other ornamental matter or device.

The heads are to be affixed to the stems, or pins, by solder, rivets, or any other kind of setting, in the same way as is usually practised by jewellers and the stems are formed or manufactured as these articles are commonly made.

The patentee has not stated, in what particular feature his invention, improvement, or novelty, consists, we are therefore, compelled to leave our readers as much in the dark upon that subject as we are ourselves.

[*Inrolled September*, 1826.]

Original Communication.

We are favoured with a copy of a petition lately presented to the chamber of Deputies in Paris, on the subject of the French Patent Laws, which, as it contains many valuable observations and hints, that may be extremely useful in a revision of our own Patent Laws, we have thought desirable to lay before our readers:

To the President and Members of the Chamber of Deputies.

Gentlemen,

The arts and manufacturers are become necessary to the prosperity of Europe, because the labour which they create is the support of mankind.

To protect the arts, those especially which increase the products, which economize, and simplify labour, and promote the importation of foreign discoveries into France, are, without a doubt, objects of the benevolent solicitude of his Majesty.

The legislator, by encouraging the applications of the human mind, to the useful arts (the source of public welfare) will associate France with the highest destinies of civilization, of riches, and of power.

Of all Encouragements the most efficacious is that which relates to the authors and importers of useful in-

ventions and discoveries, by protecting their property against infringement.

The laws of 1791 relative to patents for inventions, improvements and importations, date from a period in which the arts and manufacturers were scarcely known.

Experience which has since shewn their importance, demands now a REVISION of these laws, in order to place them in unison, with the growth of national industry.

Various nations have come to learn and imitate our first legislation respecting patents. Several of their governments have already improved upon our laws, and experience recommends them for our imitation.

It is expected that the British parliament will be occupied during part of the present session, by a revision of the statutes relative to patents for inventions, and improvements, your petitioner therefore solicits this Honourable House to lay the subject of our patent laws before a commission, which, if requisite would be assisted by the general council of fabrics and manufacturers, by the consultative committee of the minister of the interior (which under the auspices of his excellency, has already rendered a valuable service on this subject) and those of the juris consults (gentlemen of the bar) who have more particularly devoted themselves to discussions respecting patents, in order that the commissioners may examine the documents submitted to them, and avail themselves of all the knowledge and experience to be drawn from these valuable sources.

THE CHAMBER

will therefore vouchsafe to represent to His Majesty, the well timed utility of obtaining from His Majesty's wisdom the proposition for a new law, or a revision of the laws of

the 7th of January, and 25th of May, 1791, with the decrees and statutes relating thereto.

Which is the prayer of

Your most humble petitioner,

CHARLES ALBERT.

Formerly Member of the General Council of Fabrics and Manufacturers, and Member of the Society for the Encouragement of National Industry.

Succinct Observations relative to the Laws respecting Patents for Inventions, &c.

1st. The articles 1, and 2, of the Law of the 7th of January, 1791, do not define clearly enough what is to be understood by *discovery* or *new invention.* Would it not be useful to adopt this definition? "Every *new idea,* in matter or in application, realized by a new mechanical or chemical process, the employ of which has not been practised in France."

2nd. The article 16, chap. 3, states :—" Every inventor or person calling himself such, who shall be convicted of having obtained a patent for a discovery already described, and published in a printed work, his patent shall be declared null." The original idea may have been described in *foreign* works, without its useful application having been *practised* in France; thus, the article 2nd. states :— " Whoever shall first bring into France a foreign discovery, shall enjoy the same advantages as if he were the inventor of it."

Besides, the application of a theory often vague, and purely indicative, almost always requires more talent to render it of utility, than the same theory cost its author, in the commencement. On the other hand, in what

relates to the description, in works printed and published, the first chamber of the *Cour Royale*, has at length rendered an important service to French industry, by declaring that the intention of the Legislator could only extend to "works printed and published in France, and in the French language." (Decree of the 24th December 1825.) Consequently, would it not be just that the new law should declare:—that the following, will not be considered as a publication subjecting the French Patent to nullity:—
1st. Publications made abroad, and in a foreign language.
2nd. Every means, method, or application, which, although known, should not have been made use of, or practised in France, (for it is particularly by an invention having been *used* or *not*, that we should judge of the novelty and utility, of the activity and continuity, of the services and advantages resulting therefrom to Society.)

3rd. By article 8, of the law of the 7th of January, 1791, it has been decreed that Patents for Inventions should be granted for 5, 10, or 15 years, but that this last period could not be prolonged without a particular decree from the Legislative body. By article 8, of the law of the 25th May, 1791, it has been decreed:—"Prolongations of Patents can only be granted in rare cases, or for particular and cogent reasons.

The law of the Empire of Austria, grants the successive privilege, from year to year, from one to fifteen years, under the proviso of paying a progressive duty.

Progressive scales have been laid down for the amount of duty to be levied upon 5, 10, or 15 years, notwithstanding which, the holders cannot by our law claim the continuation of 5, 10, or 15 years, although they offer to pay the proportionate further duty levied thereon. Is it not evident, that the intention of the Legislator is ill interpreted by the refusal of the administration to grant the

continuation of the privilege *de plano?* The only case in which the special act of the Legislation is required, is that in which it is wanted to exceed *the last term of* 15 *years.* The law being so worded. By thus refusing to extend the privilege from 5 to 10 years, or from 10 to 15, on condition of paying the supplementary duty, the administrative authorities materially shackle the developement of industry; most often prevent the discovery from being carried to a pitch of perfection, and even if this should take place, deprive it of its just indemnity, which the patent being only granted for the first period, could not allow it to obtain. The revenue itself suffers thereby. If the law (as it is interpreted by the administration) protects the author of an invention or of an importation, only with an eye to the future interest of the public, it will depend upon the *pecuniary* means of the said authors, whether they shall deprive the public of their invention or importation for more than five, or fifteen years. The law being made to encourage the forming of useful inventions, it would be eligible that "the continuation of the privilege to the last term of *fifteen* years should be granted by law by the administration, on paying the extra tax, with an obligation on the part of the patentee, to make this reserve in his petition, on the first application for a patent. Would it not be eligible, also to introduce into the new law, the *Caveat* of the English Statutes, for 6 or 12 months, with a proportionate tax in order to give time to the author of a new idea to improve upon it, before he incurs any expenses by the payment of the whole tax.

In Prussia *no* tax is levied on patents. The Government requiring only the expenses of stamps and enregistering, to be defrayed by the parties.

4th. Art. 8, chap. 2, of the law of 25th May, 1791, forbids the author of an improvement, to execute or employ

the principal invention for which a patent was given to another person: and reciprocally, forbids the inventor to execute or employ the improvement. In the routine of the mechanical arts, the inevitable result of these prohibitions, if they were *absolute*, would be to render industry stationary, since the author of the invention could never assist himself by the improvement of his original work, and the improver, in his turn, stopped in every imitation of the principal object, would be reduced, to offer only a useless shadow of his ingenuity. The interest of the public demands that the prohibitions to be executed should in this respect be modified, that each of the authors of an invention, or of an improvement, should be bound to indemnify the other for the advantage which he derives from his industry. The laws of Austria, Prussia, and the Cortez of Spain, contain most equitable regulations on this subject.

The mode of effecting this indemnity, would be to submit the question to the decision of three judges, two of whom are to be named by the parties themselves, and the third by the president of the *Tribunal de Commerce,* or of the *Premiere Instance Civile.*

5th. The law of the 7th of January, 1791, article 12th, had authorized the patentee to proceed against *de plano,* and to seize upon the objects counterfeited, upon condition of giving good and sufficient guarantee, to answer for the damage and interests, in case the imitation should not be proved. The law of the 25th May, 1791, has abolished this temporary seizure. The patentee can only proceed by way of action before the justice of the peace of the arrondisment, in which the presumed imitator resides. The functions of the Justice of the Peace are confined to a simple *statement of the facts* of the crime, and to its suppression, excepting an appeal to the Tri-

bunal de Premiere Instance, judging as a last resort. From hence arise a most serious inconvenience. The imitators quietly pursue their spoliations during the law-suit, (which they know how to prolong at their pleasure), in such a manner as to effect the ruin of the patentee before justice, (which in France is sparing under the head of damages and interest), has allowed him the least indemnity, or established any security.

In this respect a mean term ought to be admitted, which would allow a balance in the guarantees due to each of the opposite interests. Experience has proved that the jurisdiction of the justice of the peace (particularly in the case of imitations), is surrounded by innumerable inconveniences on the subject of patents; the interests in debate are too important, and the meaus of solution too much involved in scientific research, to submit them to a single judge. There is not, on this head, equality between the parties.

In England, the seizure takes place under an injunction from the Lord Chancellor: all fabrication is suspended till the issue of the suit, and it is a jury composed of scientific men which decides. Would it not be eligible in France to place all disputes respecting patents in the hands of the Tribunals of Commerce? Their determinations are friendly and conciliatory, and more congenial with the industrious arts.

A petition presented to the President of the Tribunal de Commerce, (for there is not a department where there is not one), pertinently worded, and supported by the material proofs, (if it can be done), would be a better assurance to the patentee than any requisition of the justice of the peace, of the arrondisment for the obtaining of a decree which would proscribe the presumed imitation, and fix the seal of the tribunal upon it, until verified ulti-

mately by judges, named in opposition by the parties, and the third umpire appointed to the office by the Tribunal.

The infringement being proved, the Tribunal, on receiving notice from the umpires, could order the continuation of the prohibition till the decision; and, in this case, the judges, in proportion to the importance of the object imitated, could establish the quantum of the guarantee to be given by each of the parties.

The Tribunal of Commerce can, in its own wisdom, ordain the provisionary execution of its judgment, notwithstanding an appeal. And it would be particularly important, in order that this description of property might be duly respected, that the payment of damages and interest should be backed by constraint of person.

The competence of a justice of the peace, in such a case as this, is an attribute at variance with the legal importance. All disputes of the smallest civil or commercial interest have for guarantee of a judicial arrangement, in the first resort, the meeting of several magistrates, of which the Tribunals are composed.

All judgments which the civil and commercial Tribunals pronounce above 1000 francs of monied interest, are indiscriminately submitted to an appeal before the royal courts.

By what fatality, then, should law-suits respecting patents, which are always of great importance, be deprived in the first degree, and definitively of the ordinary jurisdiction?

6th. The ninth article of the law of the 7th of January, 1791, had decided that patents of importation of a discovery from another country, could be allowed no longer term of duration than that granted for patents, in the country from whence it was brought, for the same object. A decree of the 13th of August, 1810, has wisely revoked

this limitation, and decreed that patents of importation might be taken for five, ten, or fifteen years.

But this decree has not been inserted in the Bulletin of the laws; so that the Tribunals alternatively maintain, and reject the limitation of the year, 1791.

It would be an object then to put an end to this uncertainty in the law, and to confirm, in express terms, the decisions of the decree of the 13th of August, 1810. For the importer of a useful object, not used in France, has the same merit, with regard to Society, as the French inventor, and perhaps, by reason of the superiority of foreign industry, the importer ought to be specially protected, since he diminishes thereby, the foreign influence.

7th. In the laws of the 7th of January, and 25th of May, 1791, the creation of a directory for patents for inventions had been imagined, and afterwards appointed.

The establishment of a directory for patents of inventions, &c. has not been realized; and exists at the office of the interior only in the Bureau of the classification of patents.

The consultive committee of arts and manufactures composed of men of knowledge and merit, is charged with so many other duties, that, with the increasing augmentation of patents, it will be soon impossible for them to fulfil the functions of the directory instituted by the law.

8th. In the legislation of 1791, it has been acknowledged that there might be discoveries on which it would be of moment to the inventor, that the details of his discovery should be kept a profound secret, till the expiration of his patent, and it has been reserved to the legislative bodies to decide on these cases of exception to giving publicity to the patents. It appears that such a decision ought to proceed from the administrative authority, from

a report of the directory, since it has a relation only to acts or objects of art; the more so, since the legislative body, not being always assembled, fatal interruptions to the inventors might occur in the delivering of these patents.

9th. An object of regulation interesting both to patentees and the public, would be to determine a fixed period for the promulgation of the royal quarterly ordinances; and to consecrate to them exclusively a Bulletin of the laws, bearing a list of the patents granted during the term as well as of the transfers expiration and prorogations of patents; so that the public might (on the 15th of the following month) procure this bulletin, which would contain every information respecting patents. By this regulation, the progressive advance of industry will receive more certain publicity, and would obviate many researches, and obligations of ignorance. In England the number of patents granted, and the names of the patents are published every month, thus giving to the industrious much greater advantages as well as facilities.

10th. The expiration of patents, according to chap. 4, of article 16, of the law of the 7th of January, 1791, should be rigorously pronounced by the administration.

The preceding observations, being only the most glaring inconveniences arising from the legislation of 1791, relative to patents of improvements and importation, the legislator in its wisdom, will find sufficient other matters to attract its attention in revising a subject of such great public importance.

(Signed)

CHARLES ALBERT.

Polytechnic and Scientific Intelligence.

ASTRONOMICAL SOCIETY OF LONDON.

THIS Society resumed their sittings for the winter season on November 10th, when the business commenced by reading a letter addressed to the President by Lieut. Henry Forster, R.N., on the method of determining the longitude by moon-culminating stars. The method was employed in finding the longitude of Port Bowen, the station where the expedition for the discovery of a North-west passage, under the command of Capt. W. E. Parry, passed the winter of 1824-5. The observations were made with an excellent portable transit instrument by Dollond, of thirty inches focal length, and two inches aperture, and made as often as circumstances would admit, between Dec. 5, 1824, and April 1, 1825. The resulting longitude is $5^h\ 55^m\ 39^s{\cdot}2$ west of Greenwich; the latitude being 73° 18' 89'4' north.

During a residence of nine months at Port Bowen, Lieut. Foster had opportunities of trying most of the known methods for determining the longitude: that, by measuring the distance of the moon's limb from a fixed star, he found from the peculiarities of the climate, to be subject to these inconveuiencies: viz. The uncertainty in the amount of atmospherical refractions at moderate altitudes in extreme low temperatures:—The alteration of the index error from a change in figure of the instrument, caused by temperature during an observation, and the painful sensation of burning (denominated long ago by Virgil, the

scalding cold) on touching intensely cold metal with the naked hand. In addition to which, the condensation of the vapour from the eye, in a thin film of ice on the eye-piece of the telescope, rendering the star and the moon's limb obscure;—and further, the absolute necessity of holding the breath during an observation, as well as when reading off the measured arc;—all of which are, evidently serious obstacles to correct observation.

There was also read a communication from Dr. Rumker, of Stargard, Paramatta, to Dr. Gregory, containing an account of some Observations made at the observatory there. This paper contains, 1st, observations of the great comet in 1825, from October 18 to December 20, and the *elliptic* elements there deduced, as follows:

Passage of perihelion Dec.	$10^d\ 18^h\ 41^m\ 7^s$,	M. T. at
Long. of perihelion	318° 28' 54"	[Greenwich]
—— of node	215 44 58	
Semiaxis major	27·789087	
—— minor	8·227477	
Sidereal revolution	53500·3 days	
Inclination	33° 31' 3": motion retrograde.	

2dly, Observations on the comet in Leo, 1825, from July 9 to 15th, and the resulting *parabolic* elements, viz.

Passage of perihelion May	30·77265
Long. of perihelion	273° 4' 37"
—— of node	200 17 34
Log. perihel dist.	9·9552155
Inclination	58° 35' 58: motion retrograde.

3dly, Observations of the lunar eclipse, May 21, 1826, at Paramatta. Dr. Rumker observed the immersions and emersions of about 30 spots, as well as the time of the beginning and the end, under very favourable circumstances. The darkness of the moon during its total obscuration was such, that the occultations of stars of the 8th and 9th magnitude could distinctly be observed. Dr.

R. only observed the occultation of a star of the 7th magnitude. Immersion $12^h\ 34^m\ 38^s$: Emersion $12^h\ 34^m\ 41^s$ mean time. The declination of this star is 19° 46' S. near λ♎, which passed 7' N. of the moon's limb. The star described a very small chord, immerging and emerging repeatedly behind the inequalities of the moon's disk, before it finally disappeared.

Lastly. Observations of Mars, near his opposition, from 5th to May 15, 1826, and the south polar distances of the planet, and his distances from 2 *a* ♎ in AR and declination.

Education of the Working Classes, conducive to the National Weal.

The Baron Dupin, in delivering his opening lecture on mechanics, before the members of the Institute at Paris, took a general survey of the state of France, as to its industry and productions, connected with the arts, in order to point out the superior prosperity of those parts of France, in which the inhabitants are educated, over those in which education is neglected.

" I lay before you." said he " a map of the kingdom which represents by colours more or less deep, the degrees of ignorance or instruction, prevailing in our different provinces.

" For the departments, where the primary schools contain a tenth part of the whole population, I have passed the light colour, for those, where the schools contain only a twentieth of the whole population, the strong colour, for those, where the schools contain only the two hundred and twenty-ninth part of the population, the dark colour.

What! it will be said, does France comprehend departments where the schools contain only one young pupil out

of 229 inhabitants? Yes, there are such departments and some even still more ignorant. But, it will be said, this is the case only in Lower Brittany. No, Gentlemen, Lower Brittany even is rather less behind; it has schools which contain the two hundred and twenty-second part of the population. Is it then, at the top of the Upper Alps and the Upper Pyrenees, where the people are poor, and struggle against eternal ice and avalanches to cultivate a narrow tract of territory?—No; it is among the inhabitants of the Upper Alps and the Upper Pyrenees, where popular iustruction is most spread; because nothing gives such moral energy to a population, as to strive against great natural obstacles. This obscure portion, where only the two hundred and twenty-ninth part of the human species frequents the schools, is in the middle of the kingdom, in a large valley, beneath a mild and serene sky, in the region where the vine, the mulberry tree, and Indian wheat flourish, upon the banks of a majestic river; it is called the garden of France—it is Touraine.

Look, on the contrary at the bottom of the Pyrenees, the country of Henry the Great, le Bearn; it contains in its schools a fifteenth part of the total population.

Thus, the fertility of the soil and the mildness of the climate have no influence in the instruction of the inhabitants of our provinces; and, I repeat it, it is their activity, it is their moral energy more or less developed, that produces the enormous differences that strike your eye in the map that I have the honour to lay before you.

Remark, in setting out from Geneva and going to St. Malo, a blackish line which separates the north from the south of France. On the north there are only thirty-two departments, and thirteen millions of inhabitants; on the south there are fifty-four departments, and eighteen millions of inhabitants.

The thriteen millions of inhabitants of the north send

to school 740,846 pupils; the eighteen millions of inhabitants of the south, send to school 375-931 pupils.

The result is, that out of a million of inhabitants, the north of France sends 56,988 children to school; and the south, 20,885. Thus primary instruction is three times more extended in the north than in the south.

You shall now see what remarkable consequences result from this disproportion.

In the north of France, notwithstanding the rigour of the climate, which forbids the cultivation of the olive, the caper, the orange and the lemon-tree, and scarcely allows the growth of the Indian corn and the mulberry-tree, in a few of the departments contiguous to the southern part, and which deprives Normandy, Picardy, French Flanders, and the Ardennes, of the luxuriance of the vine; notwithstanding this privation of so many rich branches of culture, the mass of the northern people, having more instruction, activity and industry, obtain from the soil a revenue which enables them to pay 127,634,765 frs. for land-tax, for a superficies of 18,692,,19 hectares, whereas, the 54 departments of the south pay only 155,412,969 fr. land-tax for 54,841,235 hectares.

Thus, for a million hectares the public treasury receives from enlightened France 6,820,000 fr. land-tax. and from unenlightened France 3,599.700 fr.

It will probably be objected that the land-tax, in proportion to the net revenue, is more considerable in the north t han in the south. To this I will answer that having calculated the total difference, I found that the north pays only a twentieth part more than what it should pay for the charges to be proportionate between the north and the south; a difference you perceive, too trifling to destroy in any respect the consequences that I have just presented to you.

I will even add, that a surplus of two-twentieths of

taxes would not prevent the north paying its contributions more easily than the south, which has not so much industry, trade, and means of exchange and specie.

Thus, the public treasury can, without making the payment of contributions so heavy as at present, obtain more taxes in proportion to the revenue, in the countries where there is much information, and many productions and means of exchange. The superiority of the public revenue furnished by the enlightened part of France, is particularly striking in the licence tax, which is levied at the same rate in all parts of the kingdom.*

The thirty-two departments of the north pay for licence to the treasury, 15,274,456fr.; and the fifty-four departments of the south pay only 9,623,733fr.

Consequently, owing to the superiority of industry, produced by instruction more generally spread, one million of French subjects in the north, pay into the public treasury for the licenses of their arts, 1,174,958 fr.; one million of French subjects in the south, pay to the public treasury for the licenses of their arts, only 434,652 fr.

If we sum up all the direct taxes, one million of hectares pays as follows:—

	IN THE NORTH.	IN THE SOUTH.
Land-Tax	6,820,000 fr.	3,579,700 fr.
Licenses	817,000 fr.	276,216 fr.
	7,637,000 fr.	3,865,916 fr.

That is to say, a million of hectares in the north pays precisely twice as much as a million of hectares in the south. Now, the north of France sends to school 740,846 children, and the south 375,931.

Let us endeavour to find certain indications of the pro-

* A mechanic cannot establish himself in France, for the prosecution of any art or manufacture, without leave from the government, for which a tax is paid.

portion in the progress of the arts, in the two grand divisions of France, between which we have drawn a parallel

I have examined the list of the patents for inventions, for four years, the result is as follows:

For the 32 departments of enlightened France 1689 patent
For the 54 departments of unenlightened France 413 ——

The study in the colleges of Paris afforded another standard of comparison, which appeared to be valuable.

Every year the University adjudges to all the colleges of Paris and Versailles an immense number of chief prizes, secondary prizes, and accessists, In the 'Almanach de l'Universite,' may be found the names of all the pupils who obtain rewards, and the place of their birth. I began by taking away all the pupils boru in Paris, in order not to give too much advantage to the departments of the north. I afterwards reckoned up separately—1, All the pupils of the thirty-one cf the north; that of the Seine being excepted—2. All the pupils of the fifty-four departments of the south. The following was the striking result:—

Pupils of the thirty-one northern departments rewarded - - e 107
Pupils of the fifty-four southern departments rewarded - - - - 36

that is to say, one third.

But another fact appeared to me still more remarkable, In the 143 rewards there were 37 prizes and 106 accessits. Now, out of the 37 prizes granted by the University to the children of the departments, 33 were adjudged to children of the north, and only 4 to those of the south; so that in the colleges, the prizes are for the north, and the accessits for the south.

There is a school celebrated for the equity of its adjudications, and which requires in the candidates that it invites from all parts of France, very extensive mathematical and literary knowledge. I took the reception list

of the pupils of the Polytechnic School for 13 consecutive years, and I found that out of 1,933 pupils admitted, 1,233 came from the thirty-two departments of the north, and 700 from the fifty-four departments of the south.

It wonld be wrong to conclude, from such a fact, that the youth from the south are less apt for the cultivation of the sciences.

The Academy of the Sciences, to which all France bears witness that it exercises independence in the choice of its members, and consequently, chusing with equity from all the scientific men of the kingdom, presents a result still more favourable for the inhabitants of the north.

Out of 65 members, that the Academy of the Sciences reckons, the thirty-two departments of the north have given 48, and the fifty-four departments of the south only 17.

I have reserved for the last standard of comparison, those noble recompenses that the government grants at the periodical exhibitions of the productions of the national industry.

At the exhibition of 1819 the following were the proportions of the rewards :—

	32 Departments of the North.	54 Depart. of the South.
Gold Medals .	63 . .	26
Silver ditto .	136 .	45
Bronze ditto .	94 . .	36
	193	107

The exhibion of 1823 presents results not less striking.

Thus, Gentlemen, in whatever point of view we consider the two parts of France, both with respect to their agriculture and commerce; in whatever period of life we follow the population of the north and that of the south: in tender childhood when the alphabet forms the Encyclopedia: at college: in the Polytechnic School: in the Academy of the Sciences: in the invention of the proces-

ses of the Arts: and in the national rewards bestowed on industry: we every where find a difference analagous, and almost always proportional, In the eyes of men capable of comparing effects with causes, this constant uniformity of results, this superiority in every respect in favour of the part of the kingdom where popular instruction is most developed, will shew clearly the advantage of this instruction, for handicraft occupations, for the Arts, for the Sciences, for private fortunes, and for the public wealth.

And observe with me, that the most industrious and most opulent part of the south, is likewise that where popular instruction is most advanced. Which are the departments where popular instruction has most extension in the south, setting out from the east towards the south and returning to the west? They are Lyons, whose magnificent productions are celebrated throughout the universe: the Drome, the Isere, and the Upper Alps, where man struggles with ardour against all the obstacles opposed by nature: the Loire, where St. Etienne displays whatever of admirable, the industrious powers of the south can produce: Vaucluse and the Gard, and the Herault and the Ande, renowned for their numerous manufactories and their fine fine agriculture: the Upper and the Lower Pyrynees, which present us the same virtues and the same activity as the Upper Alps: and, lastly, the Charente Inferieure, and the Deux Sevres, countries remarkable for their excellent agriculture, and many arts which they cultivate.

You see, then, one half of the south reveals to us what the whole could do, and the advantage we shall have in propagating useful knowledge in the other half represented by those sombre colours which most offend your sight, in the most distant parts of this vast amphitheatre.

French Patents,

GRANTED IN JULY, AUGUST, AND SEPTEMBER, 1826.

To J. C. M. Baron, Paris, for a new construction of baking ovens —10 years.

— Count Lammartiziere, Paris, for a mechanism he calls "vat amont," to propel boats against the stream—10 years.

— Th. Hipert, Montpellier, for a process to draw and spin silk —10 years.

— J. M. Lepetou, Paris, for an ingredient to destroy bugs— 5 years.

— B. Large, Lyons, for a system of boilers for steam engines— 15 years.

— G. M. A. Chaumette, Paris, for a new species of carts—15 years.

— G. and M. Didmann, Strasbourg, for a horizontal bobbin, with a vertical pressure, to be employed in spinning machinery—15 years.

— P. C. Chevedu, Paris, for a new billiard table—5 years.

— E. N. Favreau, Paris, for a hydraulic power applicable to factories—15 years.

— V. E. Guilleaume, Paris, for improvements to M. Laforesi's hemp and flax break—5 years.

— J. Nicholson, Paris, for an apparatus of portable gas—15 years.

— Moses Poole, London, for a composition imitating gold—15 years.

— Moses Poole, London, for a process to decorate "in relief"— 15 years.

— L H. Truffant, Paris, for a mechanical inkstand—10 years.

— Belanger, father and son, St. Leger, for a clearing cylinder for carding engines—10 years.

— L. P. Fournier, Paris, for children's bolster caps—5 years.

— J. B. Souton, Rouen, for a washing apparatus to cleanse wool—10 years.

— Arnaud, Fournier and Westermann, Paris, for a system of machinery to comb, prepare, and spin long wool—10 years.

— N. A. Mercier, Louviers, for a conical motion to carry up the carriage in spinning mules—5 years.

— J. Ganahl, North America, for a rotative steam-engine—15 years.

— C. A. Thiselton, London, for a loco-motion to propel carriages—10 years.

— B. L, Berthaut, Paris, for toiles with slots and nibbs—5 yrs.

— H. Pellicat, Paris, for a power-loom—15 years.

— P. E. Kinkalla, Paris, for a system of navigation—15 years.

To M. P. Guersaut, Caen, for a process of manufacturing, at the same time, the lace and embroidery—5 years.

— A. Poussard, Toulouse, for an addition to the quadrature of a clock—15 years.

— M. Bailly, Paris, for a process wherewith every individual may take himself the measure of his coats—5 years.

— N. H. Manicler, London, for a substance he calls "vaxem," to manufacture wax candles—15 years.

— V. M. Fichet, Estrepilly, for a machine to cleanse corn—5 years.

— F. Lacarriere, Paris, for a regulator in the mission of gas—5 years.

— Viscount de Barras du Molard, Valence, for a new system of bridges—5 years.

— A. E. Jauge, Paris, for additions to the apparatus for extracting salt from liquid—15 years.

— A. N. Lhomond, Paris, for additions to his chimneys called "Parisienne"—15 years.

— Anspach and Valentin, Metz, for an oil-mill—15 years.

— O. Napier, London, for a system of canal locks—10 years.

— G. Busnoir, Lyons, for new gallooks—5 years.

— J. Collier, Paris, for a power-loom, with intermittent motion—15 years.

— M. Lorrillard, Nuits, for a machine to prepare flax or hemp—15 years.

— Joh. Knoules, London, for a new system of constructing masts—10 years.

— P. Revon, Paris, for additions to a carriage loco-motive engine—10 years.

— Hue, Paris, for making picture-borders—5 years.

— J. Lenobbe, Paris, for a wool-combing machine—5 years.

— S. Vallee, Paris, for manufacturing cotton twist, called "cordonnet-cotton"—10 years.

— L. C. F. Coninck, Paris, a new process of creating steam—15 years.

— A. Bouchet-Viors, Montpellier, for a distilling apparatus—10 years.

— Frimot, Landernan, for a rotative steam-engine—15 years.

— D. Levique, Alencon, for improvements in piston guns—5 years.

— L. F. Dorrielle, Pellusin, for a substance as a substitute for the gall-nut—15 years.

— L. Richard, Paris, for a process to propel boats up rivers—15 years.

— Joanne Freres, Dijon, for a machine to carry boats up rivers by its own current—15 years.

— V. Mouton, Paris, for manufacturing bags, &c. covered with metal—5 years.

New Patents Sealed 1826.

To Thomas Machell, of Berner's-street, Oxford-street, in the county of Middlesex, surgeon, for his invention of certain improvements on apparatus applicable to the burning of oil and other inflammable substances—Sealed 8th December—6 months.

To Robert Dickenson, of New Park-street, Southwark, in the county of Surrey, in consequence of a communication made to him by a certain foreigner residing abroad, he is in possession of, an invention for the formation, coating and covering of vessels or packages, for containing, preserving, conveying, and transporting goods, and products, whether in liquid, or solid forms, and for other useful purposes—8th December—6 months.

To Charles Pearson the younger, of Greenwich, in the county of Kent, Esq.; Richard Witty, of Hanley, in the county of Stafford, engineer; and William Gillman, of Whitechapel, in the county of Middlesex, engineer, for their having invented a new or improved method or methods of applying heat to certain useful purposes—13th December—6 months.

To Charles Harsleben, of Great Ormond-street, Queen-square, in the county of Middlesex, Esq. for his invention of machinery for facilitating the working of mines, and for facilitating the extraction of diamonds, and other precious, stones, gold, silver, and other metals, from the ore, the earth, or the sand, which machinery is likewise applicable to other purposes—13th December—6 months.

To John Costigan, of Collon, in the county of Louth, in

that part of the United Kingdom, called Ireland, civil engineer, for his invention of certain improvements in steam machinery or apparatus—13th December—6 months.

To Peter Mackay, of Great Union-street, Borough-road, in the county of Surrey, gentleman, in consequence of a communication made to him by a foreigner residing abroad, that he is in possession of an invention of certain improvements by which the names of streets and other inscriptions will be rendered more durable and conspicuous—13th December—6 months.

To William Johnson, of Droitwich, in the county of Worcester, gentleman, for his invention of certain improvements in the mode of process and form of apparatus for the manufacturing of salt and other purposes—18th December—6 months.

To Maurice De Iongh, of Warrington, cotton spinner, for his invention of certain improvements in machinery or apparatus for preparing rovings, and for spinning, twisting, and winding fibrous substances—18th December—6 months.

To Charles Harsleben, of Great Ormond-street, Queen-square, in the County of Middlesex, Esq. for his invention of certain improvements in constructing or building of ships, and other vessels, applicable to various useful purposes, and in machinery for propelling the same—20th December—6 months.

To Thomas Quarrill, of Peters-hill, Doctor's Commons, in the city of London, lamp-manufacturer, for his invention of certain improvements in the manufacture of lamps —20th December—6 months.

To William Kingston, master-millwright, of our Dock-yard, Portsmouth, and George Stebbing, mathematical instrument maker, of High-street, Portsmouth, for their

invention of certain improvements on instruments or apparatus for the more readily, or certainly ascertaining the time and stability of Ships and other vessels—20th December—6 months.

To Melvil Wilson, of Warnford-court, Throgmorton street, in the city of London, merchant, in consequence of a communication made to him by a certain foreigner residing abroad, he is in possession of an invention of certain improvements in machinery for cleaning r.ce—20th December—6 months.

To Charles Seidler, of No. 1, Crawford-street, Portman-square, in the county of Middlesex, Merchant, in consequence of a communication made to him by a foreigner resident abroad, for having discovered a method of drawing water out of mines, wells, pits, and other places—20th December—6 months.

To Frederick Andrews, of Stanford Rivers, in the county of Essex, gentleman, for his invention of certain improvements in the construction of carraiges, and in the engines, or machinery to propel the same, to be operated upon by steam, or other suitable power, which engines or machinery are also applicable to other purposes—20th December—6 months.

To Charles Random Baron de Borenger, of Target Cottage, Kentish Town, in the Parish of Saint Pancras, and county of Middlesex, for his having discovered and invented certain improvements in gunpowder-flasks, powder-horns, or other utensils, of different shapes, such as are used or can be used for the purpose of carrying gunpowder therein, in order to load therefrom, guns, pistols, blunderbusses, and other fire-arms—20th December—6 months.

To Valentine Bartholomew, of Great Marlborough-street, in the Parish of Saint James, Westminster, in the

county of Middlesex, gentleman, for his invention of improvements in shades for lamps, and other lights—21st December—2 months.

To John Gregory Hancock, of Birmingham, in the county of Warwick, plated beading and canister-hinge manufacturer, for his invention of a new elastic rod, for umbrellas and other the like purposes—21st December—2 months.

METEOROLOGICAL JOURNAL, November and December 1826.

1826.	Thermo. Max	Thermo. Min.	Barometer. Morn.	Barometer. Even.	Wind.	Weather.
Nov.						
26	34	28	29,16	29,31	W.—N. W.	Frest—snow
27	34	29	29,48	29,63	W.—N. W.	Ditto—fair
28	46	33	29,61	29,38	S. W.	Thaw—rain 7-16 inches
29	49	41	29,25	29,25	S.W.	Cloudy
30	46	42	29,25	29,29	W.	Ditto—damp
Dec.						
1	41	38	29,36	29,07	W.—S. W.	Ditto—rain 1.16 inch and wind
2	45	40	29,—	29,10	W.	Cloudy—damp—high wind
3	42	35	29,26	29,24	W.	Ditto and sun—showers
4	38	34	29,26	29,54	N. W.—N.	Fair—clear
5	37	35	29,56	29,50	N. W.	Cloudy—damp—fog
6	43	34	29,54	29,49	N.W.—S W.	Ditto—ditto—ditto
7	53	50	29,96	29,25	S. W.	Rain 9-16 inch—fog
8	51	46	29,17	29,51	W.—N. W.	Shower and wind
9	47	44	29,65	29,66	W.—S. W.	Cloudy—slight showers
10	51	49	29,68	29,72	S. W.	Rain } ¼ in mild.
11	54	46	29,65	29,71	S.—S. W.	Ditto } ¼ in mild.
12	50	46	29,66	29,43	S. W.	Ditto—slight fog
13	49	44	29,39	29,43	S. W.	Cloudy—ditto—damp
14	48	44	29,43	29,48	S. W.	Ditto—ditto
15	46	44	29,50	29,47	S.	Ditto rain 1-20 inch
16	48	44	29,46	29,58	S. E—E	Cloudy—damp
17	45	42	29,69	29,78	E.—N. E.	Ditto—fog
18	42	39	29,82	29,84	N. E.	Ditto—ditto
19	43	40	29,86	29,84	N.—S. E.	Ditto—ditto
20	42	38	29,75	29,40	S.W.—E.—N.E	Ditto rain—5-16 inches
21	40	34	29,51	29,92	N.—N. W.	Fair—clear
22	40	32	30,04	30.01	N.W—W.—S.W	Slight frost—cloudy—slight rain
23	47	42	30,03	30,11	W.—N. W.	Cloudy—damp
24	45	44	30,13	30,13	N.	Ditto—ditto—fog
25	46	42	30,16	30.20	N.—N. E.	Ditto—ditto—ditto
26	42	41	30,24	30,28	N.E.	Ditto—ditto—ditto
27	44	37	30,33	30,33	N.E.	Ditte—ditto

Hitchen, Herts. WATSON PERKS.

D.	H.	M.	S.	
1	17	0	0	☿ in conj. with ρ in Oph.
4	12	42	0	☽ in ♈ first quarter.
5	0	0	0	Clock before the ☉ 5′ 34″
7	14	12	25	♃'s 1st Satt. will immerge.
8	23	0	0	♂ in conj. with λ in Aquarius.
9	14	0	0	☽ in conj. with ι in Taurus.
10	0	0	0	Clock before the ☉ 7′ 43″.
10	7	0	0	☽ in conj. with ζ in Taurus
11	7	0	0	☽ in conj. with γ in Gemini
12	18	2	0	Ecliptic Opposition or ☉ Full Moon.
13	0	0	0	♀ Stationary.
13	17	0	0	♄ in conj. with μ in Gemini α near app.
14	4	0	0	☾ in conj. with 1 α in Cancer
14	6	0	0	☾ in conj. with 2 α in Caneer
14	16	5	49	♃'s 1st Sat will immerge.
15	0	0	0	Clock before the ☉ 9′ 38″.
15	12	0	0	☾ in conj. with π in Leo.
16	16	0	0	♂ in conj. with φ in Aquarius.
19	14	0	0	☾ in conj. with α in Virgo.
19	15	0	0	☾ in conj. with ι in Virgo.
19	22	0	0	☿ in conj. with 1 γ in Sagitt
26	0	0	0	Clock before the ☉ 11′ 16″
20	4	48	0	☾ in ≏ last quarter.
20	6	9	0	☉ enters Aquarius.
21	3	0	0	☾ in conj. with 2 α in Libra
21	14	0	0	☿ in conj. with ο in Sagitt.
21	17	59	12	♃'s 1st Sat. will immerge
22	0	0	0	☾ in conj. with κ in Libra
22	4	0	0	☾ in conj. with λ in Libra.
22	0	0	0	☾ in conj. with 1 β in Scorpio
22	9	0	0	☾ in conj. with 2 β in Scorpio.
25	12	0	0	☾ in conj. with γ in Scorpio
23	12	27	30	♃'s Sat. will immerge.
23	14	0	0	☾ in conj. with ρ in Oph.
24	11	0	0	☾ in conj. with 1 μ in Sagitt
24	11	0	0	☾ in conj. with 2 μ in Sagitt
25	12	0	0	☾ in conj. with δ in Sagitt.
26	21	46	0	Ecliptic conj. or ● New Moon.
26	0	0	0	Clock before the ☉ 12′ 49″
28	0	0	0	♃ Stationary.
29	21	0	0	☿ in conj. with ♅ long. 22° in Capri. ☿ lat. 1° 17′ ♅ lat. 29′ S. diff. lat. 48′
30	13	20	54	♃'s 1st Satt. will immerge.

The waxing ☽ moon—the waning moon ☾

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, November and December, 1826.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low.			Hig.	Low.	High.	Low	
Nov.						Dec.					
26	36	19	29,30	29,17		11	53	47	29,76	29.70	,075
27	34	27	29,66	29,50		12	53	43	29,76	29,51	
28	48	26	39,70	29,54		13	51	42	29,51	29,46	,175
29	49	42	29,30	29,29		14	52	35	29,54	29,50	
30	48	33	29,30	29,29	,075	15	49	39	29.54	stat.	
Dec.						16	50	43	29,54	29,50	,075
1	42	30	29,44	29,10		17	46	40	29,77	29,70	
2	48	35	29,10	29,05	,3	18	49	39	29,90	29,86	
3	41	35	29,30	29,29		19	47	37	29,90	29,80	
4	42	30	29,45	29,30	,05	20	41	32	29,80	29.46	
5	42	35	29,66	29,58		21	41	34	29,90	29,55	,15
6	46	31	29,61	29,52	,2	22	41	28	30,10	30,08	
7	54	49	29,56	29,35	,2	23	48	40	30,13	30,08	,025
8	51	46	29,50	29,20	,225	24	49	43	30,19	30,15	
9	46	39	29,81	29,76		25	47	42	30,23	30,20	
10	56	40	29,80	29,77	,275						

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32 N. Long 0° 3′ 51 W. of Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

The Dumfries Journal states, that Mr. Law, of Kirkcudbright, the able mechanist of the Dumfries clocks, had made an exhibition before the magistracy and a number of the respectable inhabitants of Kirkcudbright, of a new constructed wheeled carriage, his invention, which met with the approval of all its beholders. The body of the carriage is similar to a gig with a third wheel in front, and though propelled by neither wind, steam, air, water, or horse-power, went, even in its unfinished state, at the rate of six miles an hour. Mr. Law having full confidence in the principle of motion which he uses, means to make his invention the subject of a patent.

NORTHERN DISCOVERIES.——The Russian American Company are preparing an expedition for the purpose of exploring the Western Coasts of North America towards the Frozen Sea, and to Hudson's Bay; with the intent of adding to the discoveries which have been made by Captains Parry and Franklin.

Mr. Jennings, the publisher of Capt. Battye's Views on the Rhine, Hanover, &c. has in a state of forwardness a Series of Views in England and Wales, from drawings by J. M. Turner, Esq. R. A.; the whole of which will be engraved in the line manner by the same able artists that executed the above works.

NUMISMATICS.—A Catalogue has just been published at Turin, of a very interesting and valuable cabinet of Medals in that city, 4631 in number; of which 144 are gold, 3671 silver, and the rest bronze and brass.

Messrs. Hayday and Boyer, bookbinders of Winchester-street, have discovered a composition, by the use of which gilding may be fixed upon silk or velvet bindings, without any injury thereto, however delicate the colour. Previous to their invention, gilding on the outside of books, covered with such fabrics, has never been performed with success.

At the Clarendon press, Oxford, preparations are making for the publication of new editions of Sir Walter Raleigh's History of the World, and Oldy's Life of Sir Walter Raleigh, and also the works of John Marston, the whole of which are in a great state of forwardness.

Proposals have been issued for publishing by subscription, England's Historical Diary; which will detail the most important events connected with the grandeur and prosperity of the British Empire.

The Traditions of Lancashire are collecting for publication, by a gentleman of that county, whose poetical works and Tales, &c. have already procured him some celebrity.

J. F. Daniell, Esq. F.R.S. has in the press, a new edition of his Meteorological Essays, with additions on the subject of the Constitution of the Atmosphere, the Radiation of Heat, the Climate of London, &c.

Mr. Burnet, the author of the clever work, "Practical Hints on Composition and Light and Shade in Painting," has in the press, to appear early in the Spring another work, on the General Management of Colour in a Picture.

In the press, a Sequel to the Diversions of Purley. containing an Essay on English Verbs, with Remarks on Mr. Tooke's work, and on some Terms used to denote Soul or Spirit. By John Barclay.

LONDON:

JOSEPH SHACKELL, PRINTER, KIRBY STREET, HATTON GARDEN.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. LXXVI.

Recent Patents.

To THOMAS ROBINSON WILLIAMS, *of Norfolk Street, Strand, in the County of Middlesex, Gentleman, (formerly of Newport Rhode Island, in the United States of America,) for his Invention or Discovery of a machine for separating Burs, or other substances from Wool, Hair, or Fur.*

[Sealed 18th September, 1826.]

THERE is a certain description of wool imported from South America, which is so extremely foul and clotted together, with small pieces of pitch, and a multitude of burs, and other matters sticking to it, that though some of this wool is extremely fine, and would be valuable, if cleared, yet it is deemed almost useless and unsaleable, from the difficulty of removing these impurities, and bringing it into a manufacturing state. The principle object therefore of the patentee is to construct an apparatus

calculated to open and cleanse this description of wool with facility, and which apparatus, composed of parts not in themselves new, separately considered, constitutes as a combined whole, the subject of the present patent.

The invention is said to consist in a particular arrangement of mechanical parts conveniently combined and adapted to the above described purpose, which machine, is to be actuated by steam, water, manual labour, or any other motive power.

In plate XVI, fig. 1, exhibits a section of the machine taken longitudinally, or the side of the boxes and frame-work removed, with the several wheels, riggers, and bands, by which the internal parts are actuated. *a*, is an endless band, or feeding cloth, distended by means of rollers, upon which the wool is to be placed, and evenly spread; *b*, and *c*, are a pair of feeding rollers, the upper roller being pressed by a lever *z*, bears upon the lower one, and turns by friction or by gear, as in the ordinary way of constructing feeding rollers; *d*, *d*, *d*, is a cylinder around the periphery of which a series of blocks, *e*, *e*, *e*, are placed, each block having a row of teeth set in an oblique direction to the axis of the cylinder.

The impelling power is applied by means of a rigger to the axle of the cylinder *d*, and upon this axle, a pulley receives a band *f*, *f*, which drives the small wheel *g*, upon the axle of the lower feeding roller *c*. By these means the wool or other material is progressively brought forward and submitted to the action of the teeth as the cylinder *d*, revolves.

In this part of the operation the burs, loose dirt, and other impurities, become in some measure separated from the wool, by the operation of the teeth as they come in contact with it, which being thus separated partly descend through the curved grating *h*, and fall to the ground.

Gurney's Imp.d Musical Instruments.

Nunn & Freeman's Lace Machine.

Fig. 4.

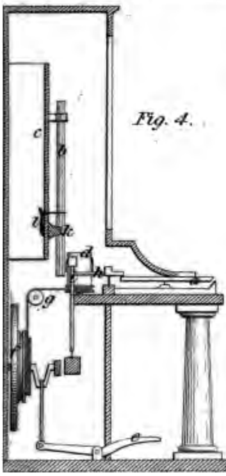


Fig. 7.

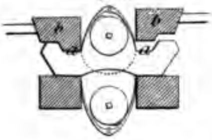


Fig. 5.

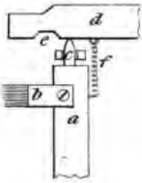
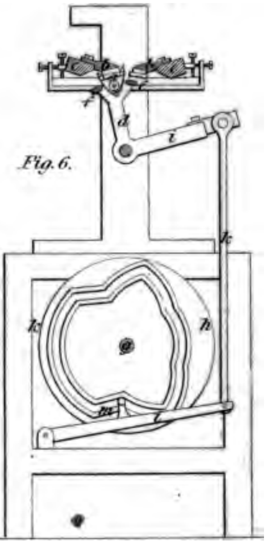
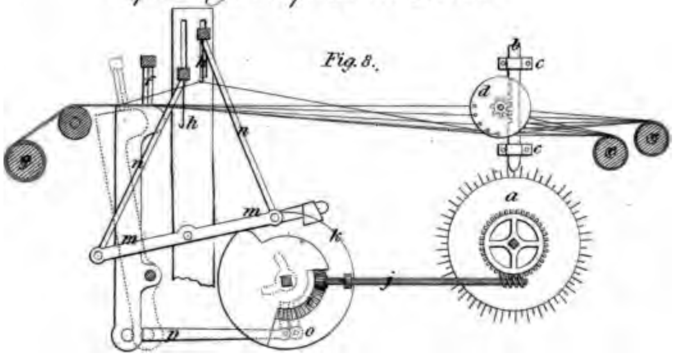


Fig. 6.



Spilsbury's Imp.d Power Loom.

Fig. 8.



Williams's Machine for Cleansing Wool &c.

Fig. 3.

Fig. 2.

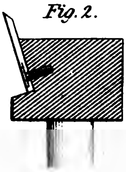
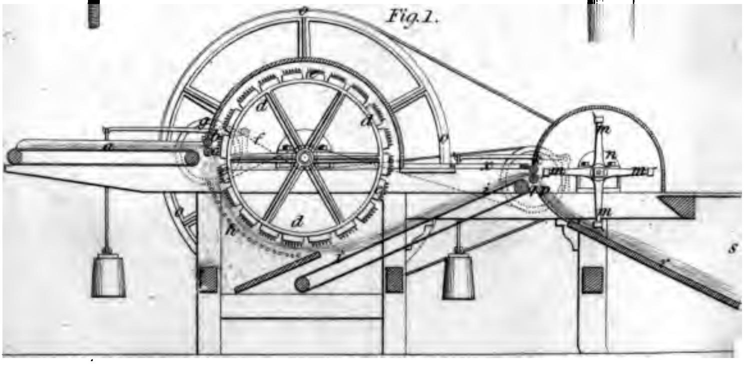


Fig. 1.



T. Newton del.t — 7th February 1827. — J. Bacon sc.

The wool being carried forward by the rotation of the breaking teeth, is deposited upon the second endless web, *i, i, i,* which conducts it to the second pair of feeding rollers *k, l,* there being above, a grating *x*, for the air to pass off.

These feeding rollers are made to turn like the former, by a band *m, m,* extending from the pulley before mentioned on the axle of the breaking cylinder, and the endless web *i,* is brought forward by gear connected to the axle of the lower feeding roller *l,* and the wool or other material, thus conducted between the feeding rollers, *k, l,* is now subjected to the action of the rotatory combs *m, m, m, m.*

The combs *m,* are mounted upon blocks, attached to a series of arms, which revolve upon an axle. (The section of the block, with the comb attached, is shewn upon an enlarged scale at fig. 2.)

At the end of the axle of the rotatory combs, a small wheel *n,* is affixed, from whence a band extends to the large wheel *o,* upon the axle of the breaking cylinder, and thus by the rotation of the breaking cylinder, the combs are made to revolve with great velocity, and to carry the wool with them, and the burs or other substances, having a greater specific gravity, are by the centrifugal force, thrown against the edge of the curved sheet of steel *p,* and fall off through the space *q,* to the ground.

The wool or other material thus cleansed, proceeding down the inclined plane *r,* is blown forward through the trunk *s,* into an apartment provided to receive it.

When hairs are to be separated from wool and fur (to which this apparatus is also applicable) it is necessary to divide the room into which they are blown by this machine, as above described, into two or more compart-

ments, one above the other, that the lighter parts of the material may deposit themselves on the uppermost shelves or receptacles. Fig. 3, exhibits one of the detached teeth of the breakers, the rows of which, are screwed into the blocks of the breaking cylinder in diagonal positions.

This apparatus is adapted to the cleaning of every description of wool which may be clotted and entangled with burs and other adhesive matters, and also to the removing of foul matters from fur and hair.

The patentee says in conclusion, "though I have herein described several parts of the machine which are not new, and are therefore, not claimed separately therefrom, yet I claim the whole as a new combination, for the purposes above stated, and I also claim particularly, the curved edge of steel *p*, in the situation and manner in which it stands opposed to the revolving combs as above exhibited."

[*Inrolled November*, 1826.]

To GOLDSWORTHY GURNEY, *of Argyle Street, Hanover Square, in the County of Middlesex, Surgeon, for his Invention of an Improved Finger-keyed Musical Instrument, in the use of which, a performer is enabled to hold or prolong the notes, and to increase or modify the tone at pleasure.*

[Sealed 11th January, 1825.]

THE peculiar feature of novelty in this invention, is the adaptation of musical glasses to a piano-forte, or other keyed instrument instead of strings. The patentee proposes to place within the case of a cabinet piano-forte a

series of glass tubes of different lengths, in vertical positions; or glass goblets, or bells of glass, within the case of a grand or square piano-forte, in such situations as may be most convenient for the purpose of being played upon according to the form of the instrument, and to pass a ribbon or band something similar to a violin bow, over some parts of the surfaces of these glass vessels, in order to effect a vibration, and cause the glass to produce a musical sound.

The construction of these improved instruments may be varied according to circumstances, and which is in some measure left to the ingenuity of the manufacturer, the invention consisting in the employment of glass vessels for the production of sound, instead of strings, in a musical instrument with keys, upon the plan of a piano-forte. The patentee, has however, set out a certain disposition of mechanism to effect the object, and upon which plan an instrument has been constructed which is said to produce musical notes of a peculiar and exquisitely melodious quality.

Plate XVI, fig. 4, is a section of an upright or cabinet piano-forte constrneted on the improved principle; *a*, exhibits one of the keys; *b*, one of the glass tubes attached in a perpendicular position to the sound board *c*. The keys *a*, are placed in a row, in front of the instrument as usual, and a similar number of glass tubes *b*, are suspended opposite to the respective keys. There are two cylindrical rollers *d*, (only one of which is seen in the figure,) these are placed upon vertical axles, and are intended to receive an endless band or ribbon, which is to pass along in front of the glass tubes. This endless band or ribbon is made to traverse by means of the treadle *e*, which being worked by the foot of the performer, puts the fly-wheel *f*, in motion, and a cord or cat-

gut band carried from one of the pullies on the side of the fly-wheel up to the pulley *g*, causes the rollers *d*, to revolve, and the endless band or ribbon to move along in front of the glass tubes.

The performer on touching one of the keys, causes the piece *h*, to advance and to push the piece *i*, forward, which presses the ribbon or endless band against the glass tube *b*, and as the ribbon is made to traverse by the movement of the fly-wheel and cord as described, its friction produces a vibration of the glass, and a musical note is given out.

The glass tubes *b*, are to be of various lengths according to the notes they are intended to produce, and to be attached to the sound board *c*, as shewn. They are kept in their positions, by falling into small semi-circular recesses in the rail *k*, and are secured by wires connected to small springs *l*, behind the sound board; they are tuned by grinding away the end of the lower tube.

In order to produce the vibration of the glass tubes with certainty, the ribbon or endless band is to be coated with a sort of varnish, or preparation of rosin; and as it is necessary, that a small quantity of water should be deposited upon the surface of the glass tube when a tone is to be produced, a vessel containing water, formed like a lamp with a cotton wick, is to be placed in such a situation that the band or ribbon by rubbing against the cotton may take up a small quantity of water, which is continually ascending into the wick by capillary attraction.

When glass goblets or glass bells are applied to the same purpose as the tubes above described, it will be necessary to fix them to the wood-work or sound board, by means of cement, and to dispose them irregularly in such situations as will keep their surfaces apart, and yet

allow of the keys set in the usual way, and at their ordinary distances, to act upon the several glasses. Under these circumstances it will be necessary to conduct the endless band or ribbon, which is to rub against the glasses, over several pullies or rollers in zigzag lines, and to make the pushers or pieces that are to press the ribbon against the glasses, of different lengths, leading from the several keys to their respective glasses. Things being thus disposed, and the necessary tuning of the glasses arranged, and the water applied as before described, the traversing of the ribbon or endless band is to be produced, as explained in the former instrument, the key being now touched by the finger of the performer, the traversing ribbon is caused to rub against the particular glass intended to be sounded, and thus are produced the different notes corresponding to the musical scale.

[*Inrolled July,* 1825.]

To Henry Nunn, *and* George Freeman, *both of Blackfriars Road, in the County of Surrey, Lace Manufacturers, for their Invention of certain Improvements in machinery for making that sort of Lace, commonly known by the name of Bobbin-net.*

[Sealed March 15th, 1825.]

The improvements herein proposed, apply to that particular construction of machine for making bobbin-net lace called the *traverse warp machine,* and which, in the present instance, is intended to be worked by the rotatory power of a steam engine or water wheel, instead of manual labour. The improvements which form the sub-

ject of this patent, are described under three heads; first, a mode of traversing the spole thread; secondly, in working a single tier of bobbin carriages upon circular combs; and thirdly, improvements in the form of the jacks and lockers.

Plate XVI, fig. 5, is the contrivance for traversing the spole-threads, which represents a portion of the end of the bar that carries the guides which direct the threads; *a*, is the bar; *b*, the guides set into leads, and screwed to the bar as usual; *c*, one of the pivots upon which the bar slides; *d*, an end plate, intended to confine the guide-bar. In this plate there is a recess *e*, into which the end of the bar occasionally passing causes the bar to shog or slide latterally, the spring *f*, pulling the bar with sufficient force against the end plate to keep it steady. The patentees have not thought it necessary to describe the manner in which the guide-bar is moved, or the traverse of the threads effected, that being done we presume by the ordinary means employed in the traverse warp-machines, which have long been in use, and are well understood.

Fig 6, is a section taken through the middle of the machine, exhibiting the improved manner of working a single tier of bobbins and carriages on circular combs; *a*, is the bobbin and carriage; *b*, *b*, the circular combs set into leads and screwed to the comb-bars *c*, *c*, in the usual way; *d*, is a vibrating lever, carrying two pusher bars, *f*, *f*, which as the lever vibrates, alternately strike the sides of the bobbin-carriages, and pass them to and fro, from the combs on one side of the machine, to the combs on the opposite side.

The rotatory axle, *g*, which carries the cam-wheel *h*, being made to revolve by the means of any convenient power, the operative parts are put in action; the vibra-

tions of the lever *d*, being produced by its connection to the arm *i*, and rod *k*, the lower end of which rod is attached to a lever *l*, at bottom of the machine, and a boss or stud *m*, extending from this last mentioned lever, and working in the curved groove of the cam-wheel *h*, causes the movement of the parts above to take place, at certain intervals of time, determined by the excentricity of the groove in the cam-wheel.

It is in the contemplation of the patentees to actuate this machine occasionally by the hands of a workman, instead of connecting it to a steam-engine, and employing rotatory cams. This may be done by attaching handles and treadles which shall command the several parts of the machanism, in a similar manner to which lace-making machines are usually worked.

Fig. 7, shews two bobbins and carriages, called by the patentees jacks, the improvement in which, is a small notch, *a*, *a*, on each side, for the lockers *b*, *b*, to fall into, for the purpose of holding them more steadily, than by the old mode. This is said to be extremely advantageous and to obviate a great inconvenience, to which this sort of machine was heretofore subject.

[*Inrolled September*, 1825.]

To FRANCIS GIBBON SPILSBURY, *of Leek, in the County of Stafford, Silk Manufacturer, for his Invention of certain Improvements in Weaving.*

[Sealed 11th January, 1825.]

THESE improvements apply to a power-loom for weaving figured goods, and have for their object, a more simple and economical method of reading in, and weaving

an elaborate pattern, than any that has been heretofore employed. A diagram representing the construction and situation of the essential parts of the improved locm, is exhibited in plate XVI, at fig. 8, but the patentee has not thought it necessary in his specification, to give drawings of the complete machine.

The improvements may be considered under two heads, first, the means proposed in place of a draw-boy. for raising the various parts of the warp, so as to produce any required pattern; and secondly, the mechanism for working the different evolutions of the loom. *a,* is a cylindrical barrel, intended to revolve upon its axis, the periphery of which is perforated with holes, at equal distances apart, and into these holes are inserted pins of different lengths; *b,* is one of a series of sliders intended to move up and down in the frame *c, c,* which sliders are raised by the pins of the barrel *a,* striking against their lower extremities; *d,* is one of a series of thin circular plates, placed loosely upon an axle. To each of these circular plates, a small toothed-wheel is affixed, and these wheels take into racks on the edge of the sliders.

There are the same number of circles of radiating pins placed at equal distances along the surface of the cylinder *a,* as there are sliding racks *b,* and these racks are intended to act individually upon the several circular plates *d,* the number of which plates is equal to the number of threads, or rather systems of threads distributed in the breadth of the warp. The circular plates are perforated with a certain number of small holes, through which the several warp threads of different colours are passed, constituting each system of threads in the warp, which threads are received from the warp-roll *e,* and after passing through the circular plates *d,* are carried forward through the slay *f,* to the work-beam *g.*

It is here to be observed that the warp-threads are placed in systems of five or six, or any other number of colours, one under the other, according to the colours which are to appear in the pattern when woven, each coloured thread passing through a distinct hole in the circular plate, of which plates there are as many as there are series of warp threads extended across the loom, the several circular plates being acted upon by distinct sliders in the manner above explained.

It will now be perceived that when any one of the pins in the revolving barrel *a*, raises one of the sliders *b*, that the rack on the edge of the slider, will cause the small pinion, and its circular plate *d*, to turn round, and perform a portion of a revolution, and consequently to bring down the several threads in succession, to the lowest line, shewn by dots; and which, of the several colours or individual threads shall be brought into this lowest situation, will depend upon the length of the pin that acts against the slider, raising it in proportion, and turning the circular plate into the position required. The thread thus brought down is now ready to be lifted by the heald or what acts as a heald in this loom, the hooks *h*. On the hook rising in a similar manner to the heald, in an ordinary loom, it has a small latteral movement, designed to free it from the other threads, which causes the hook to take hold of the lowest thread, and then to draw it away from the other threads of the system, into the elevated situation shewn in the figure.

The thread being now open and in a situation for the shuttle to pass in front of the slay as usual, the intervention or weaving of the thread is effected, after which the descent of the hooks liberate those parts of the warp that were taken up, and before the next stroke of the shuttle the warp is lifted again in a similar manner, in order to produce the next portion of the pattern.

The mechanism which actuates the several parts of the loom, constituting the second head of the invention, may be also seen in a skeleton form, in the figure above referred to; *k*, is a wheel to which the moving power is applied for putting the loom in operation, and upon the axle of this wheel there are cams, formed with concentric curves, at different elevations from the centre. These cams are intended to actuate the lever *m*, which by means of the connecting rods *n*, *n*, cause the healds or hooks *h*, *h*, to ascend and descend at the proper intervals of time, and to effect the taking up of the warp, in the manner above described.

As the power or first mover by which the loom is to be worked must be a uniform rotatory motion, and the several evolutions of the loom requiring interrupted movements, the cams upon the main axle, as they revolve, effect the actions of the headles at given intervals, in the manner above explained, and at every revolution of the main axle the drum is moved onward one degree or space, equal to the distance between two of the radiating pins. This is effected by a toothed-segment *i*, upon the axle of the cam-wheel, which, as it comes round takes into a bevelled toothed-pinion at the end of the horizontal shaft *j*, and turns it sufficiently for the endless screw at the reverse end of the shaft to move the toothed-wheel and barrel *a*, the required distance, that is, to advance the barrel one space.

The beating up of the shoot, after the shuttle has passed, is produced by a small vibration of the slay, which is caused by a revolving arm, shewn by dots, upon the main axle, striking against a short lever *o*, to which the lower end of the arm or sword which support the slay is connected by a rod *p*.

The mode by which the shuttle is to be projected to

and fro, and by which the warp and work-rollers are to be turned is not shewn, as those parts of the operation are to be performed by the contrivance commonly adopted in power-looms, and which are not claimed as forming any part of the present invention.

As the great object of the patentee, is to economize time in setting any elaborate pattern into the loom, which is called *reading in*, it is necessary to observe, that this is done by drawing out the pattern, in the first instance, upon paper, by a scale corresponding to the threads in the loom, and then putting the paper round the periphery of the barrel. When this is done, the pins are to be put through the pattern paper into the holes in the barrel, the different lengths of the pins being so regulated, that the coloured threads may be raised in the loom by the means above described, so as to correspond with the pattern previously drawn, and intended to be woven.

[*Inrolled July*, 1825.]

To Edmund Lloyd, *of North End, Fulham, in the County of Middlesex, Gentleman, for his Invention of a new apparatus, from which he purposes to feed Fires with coal and other fuel.*

[Sealed 19th February, 1825.]

This apparatus may be adapted to almost
of fire place, it consists of a box or recess, fo
the grate, a little above the top of the fir
recess is to receive a sufficient
fuel, to supply the consumption

able time. The box is to be closed in front by a sliding door, supported by chains passed over pullies, which door being balanced, may be readily slidden up, by applying the hand to a small nob or button, and when the door has been thus raised, the coal may be drawn forward on to the fire.

The weight of the door is proposed to be counterpoised by a loggerhead, or iron ball attached to the end of a lever above, which in its descent draws up the suspending chains, and thereby raises the door with very little labour.

The apparatus may be slightly varied in several ways, still adhering to the principle, which is so simple and obvious, that a representation of the contrivance is not necessary, and indeed its plan of arrangement would require some degree of variation under every change of situation or circumstance.

[*Inrolled April*, 1825.]

To JAMES FOX, *of Plymouth, in the County of Devon, Rectifying Distiller, for his Invention of an Improved Safe, to be used in the distillation of ardent spirits.*

[Sealed 14th May, 1825.]

THIS apparatus is designed to prevent the surreptitious removal of spirits from the worm or refrigerator of a still. It consists of a copper box securely closed on all sides, into which box the condensed spirit is to be delivered from the worm pipe. The box is furnished with glass windows in the sides and top, for the admission of light to the interior, by which the process of distillation may be observed,

and there are cocks and pipes for drawing off the spirit, connected to an indicator, which registers the quantity of liquor removed.

Plate XVII, fig. 1, is a perspective view of the safe, one of its sides being removed in the figure to expose the parts within. *a, a, a,* are the sides of the box made of thin sheet copper tinned on the inner surface; *b, b,* are apertures into which circular plates of glass are inserted. These apertures have flanked rings of metal soldered into them, forming rebates to receive the plates of glass, which are secured in these frames by other rings of metal, screwed into the former, in the inside of the box; by which contrivance the glass cannot be removed on the outside: *c,* is a similar plate of glass, let into an aperture in the top of the box, but as this plate cannot be secured as the others in the inside, a bar with staples is placed over the plate, and fastened by a padlock or other convenient fastening.

The box being thus secured so that liquid spirits cannot be withdrawn from the interior through any of the apertures, the pipe or tube *c,* is to be connected to the end of the worm, or refrigerator of a still, or it may form part of the worm pipe: when the spirit as it becomes condensed, will drip from the pipe or tube *c,* to the bottom of the box, and may then be drawn off by the cock *d,* into a proper receiving vessel.

There are three separate outlets or pipes from the cock *d,* in order to turn the fluid towards a receiver in any direction that may be required, and the position of the cock leading to each pipe, is accurately set by an index under the handle *e.* The tube *f,* is for the rapid discharge of water, in cleansing or proving the worm, or refrigerator, and the caps *g, g,* are vessels perforated with very small holes, for the purpose of admitting air, through the tubes

h, h, to the interior of the safe, which are so constructed, that the liquid spirits cannot be drawn out of the safe through them.

For the purpose of indicating any ebulitions which may take place within the worm or refrigerator, a small piece of foil, or other thin material is to be suspended to the mouth of the tube *c*, which, being easily agitated by the air, shews whether the operation is going on steadily.

In order to withdraw small samples of the spirits, to proove its state of concentration, the cock *i*, is employed, which has an aperture in its plug, capable of containing a certain quantity of liquid, this is turned round by the handle *k*, and the liquid delivered through the small pipe *l*, to the outside of the box or safe. That the quantity of spirits which has been thus from time to time withdrawn from the safe may be accurately known, a counting apparatus consisting of a train of wheels, and index, is attached to the farther end of the axle of the cock, on the outside of the safe, which being referred to, will shew the number of times that the cock has been turned, and consequently the quantity drawn off; there is also a ratchet-wheel and pall connected to the end of the same axle, which prevents the cock being turned the reverse way.

It is obvious, that this safe is an apparatus designed principally to prevent distillers from defrauding the Revenue, and we understand that the patent has been purchased by the Board of Excise at a very handsome premium.

[*Inrolled July,* 1825.]

To JOHN PHIPPS, *of Upper Thames Street, in the City of London, Stationer, and* CHRISTOPHER PHIPPS, *of the Parish of River, in the County of Kent, Paper-maker, for their Invention of an Improvement or Improvements in Machines for Making Paper.*

[Sealed 11th January, 1825.]

THIS improvement applies to a certain apparatus, which has been many years in use, denominated "Fourdrinier's patent machine for making paper of an infinite or any required length." This machine is so constructed, that the pulp, of which the paper is to be made, flows freely from the vat on to an endless web of wire-gause, and being there agitated, is caused to settle into a compact consistency. The paper thus made, is then progressively carried forward, by the traversing of the endless web, and passed between squeezing rollers, for the purpose of expressing the water, and is thence conducted by an endless felt to the reel, where it is taken up as fast as it becomes formed upon the gause web.

This machine has been heretofore capable of producing only that description of paper called wove, that is, without lines or water marks: it is therefore the object of the patentees, by their present improvement, to enable the same machine to make what is called laid paper, that is, with lines or water marks.

In order to effect this, they propose to construct a cylinder, the periphery of which shall be made of wire-gause, or the same material that flat paper moulds are usually made of. This cylinder is to be formed by wooden ends, and a series of concentric rings or hoops, having an iron axle through the whole, and the wire-

gause to be bound round the periphery of the cylinder, and so neatly joined at the seam, that no junction shall be perceptable. This cylinder is then to be mounted upon the machine, by its pivots falling loosely into slots or openings in brass carriages, placed on the side frames of the machine, and the cylinder bearing with considerable weight upon the new formed paper lying upon the endless web, (as described above,) will by the traversing of the paper, and the web under it, be made to revolve, and the wires upon the periphery of the cylinder, to impress the required lines or water marks into the new formed paper.

[*Inrolled July,* 1825.]

To Jonathan Andrew, Gilbert Tarlton, *and* Joseph Sheply, *all of Crumpsale, near Manchester, in the County Palatine of Lancaster, Cotton Spinners, for their Invention of certain Improvements in the construction of a Machine used for Throstle and Water-spinning of Thread or Yarn, whether the said Thread or Yarn, be fabricated from Cotton, Flax, Silk, Wool, or any other fibrous substances, or mixture of substances whatever; which said Improved Machine, is so constructed, as to perform the operations of Sizing and Twisting in, or otherwise removing the superfluous fibres from the said Thread or Yarn; and is also applicable to the purpose of preparing a Roving for the same.*

[Sealed 11th January, 1825.]

These improvements are designed to expedite the process of throstle or water-spinning, and doubling, of cotton,

flax, silk, wool, and every other fibrous material. The patentees commence their specification, by describing the construction and dimensions of the ordinary spindles and flyers, employed in the old spinning machinery, and proceed, pointing out their defects, by which it appears, that a spindle of the usual construction, if made to revolve with a velocity exceeding four thousand revolutions per minute, is put into such a state of vibration, as to prevent the proper performances of the bobbin, in taking up, and consequently that the threads frequently catch and break, and a very considerable quantity of waste is produced, beside great hindrance and loss of time, in the operation.

The present improvements, are therefore designed among other objects, to remedy these defects, and consist in the first place in making the spindle which twists the thread or yarn distinct from that which causes the taking up, or coiling upon the bobbin. In plate XVII, fig. 2, shews the several parts of the spindle, socket, and flyer, detached from each other. Fig 3, exhibits the whole put together in the machine, as it would be when in action; *a*, is the socket and rest, which is to be screwed into the rail in front of the machine, and made fast by a nut on the under side; *b*, is the whirl, and *c*, *c*, the flyers, affixed to the whirl, which, in this case, are made with their arms extended upwards, instead of downwards, as usual. The central part of the whirl is made hollow, and fits on to the socket *a*, the enlarged part of the socket forming a rest upon which the lower part of the whirl bears as it spins round; *d*, is the central spindle, intended to pass through the socket *a*, and to touch it only at the contracted part in the upper end: this is to avoid friction; *e*, is a small bearing affixed to the spindle, upon which the bobbin is intended to bear, and the bobbin is

to be made of a cylindrical piece of wood, without shoulders at its ends.

The spindle being thus formed double, and the flyers inverted as shewn at fig. 3, the spinning or twisting of the thread is performed by the rapid rotation of the whirl *b*, and flyer *c*, and the taking up or receiving of the thread into a cop, is effected by the slower rotation of the central spindle *d*; hence the motions of the two are distinct, and the very rapid rotation of the whirl and flyer, which produces the spinning or twisting, does not effect the taking up spindle.

By this improved contrivance the patentees can spin in a throstle machine much finer threads or yarns than by the old mode, the flyer being capable of revolving six thousand times per minute, without in any degree disturbing the taking up process.

The bobbin placed at top of the spindle *d*, being without shoulders, the form of the cop is not necessarily confined, but may be made of any figure, according to the ascent and descent of the spindle, which is moved up and down by the copping rail *f*, and this is effected as in mule spring machines. by the rotation of a heart-wheel; or rather by a heart-roller, formed tapering as the fustrum of a cone: and which heart-roller, is made to traverse along, by means of a rack, for the purpose of accommodating the movements of the copping rail to the increasing diameter of the cop, as the thread or yarn coils upon it, but this part of the apparatus is not claimed as new. The cop thus produced may then be slipped off the end of the spindle, which is an advantage, affording a convenience and facility to the future operation of reeling.

Another improvement proposed under this patent applies to the drawing apparatus, which usually consists of three pairs of rollers, the second pair revolving

faster than the first, and the third pair, or delivering rollers faster than the second; by which the filaments of cotton, or other material operated upon, are progressively drawn out, and rendered thin; but an inconvenience arising from the material opening between the second and third pairs of rollers, and the short fibres curling up, it is here proposed to introduce an additional pair of rollers, between the second and third pair, as at *g*, fig. 3, by which the short fibres are prevented from opening.

The tenacity of the fibres, is further promoted by the introduction of a sizing roller, *h*, below the delivering rollers, which is made to revolve in an opposite direction to the delivering rollers, and being partly immersed in a trough or box containing size, or other adhesive matter, it deposits the size upon the filaments as they proceed downwards towards the spinning apparatus, and produces the same effect as if they had been sized with a brush, making the fibres adhere, and the thread or yarn when spun, of a fine, smooth, firm, and wirey appearance.

It is presumed, that the circulation of air caused by the rapid rotation of the flyers will sufficiently dry the size before the thread is coiled upon the bobbin, but if this should not be found to be the case, a heated roller, or cylinder, may be introduced below the sizing roller, and if the operation of singing off the downy parts of the thread should be necessary, a tube for conducting oil gas may be introduced, with small perforations from whence flames may proceed to singe the thread, as is commonly practised.

As a further improvement, it is proposed to reduce the width of a throstle spinning machine from its usual dimensions, of three feet nine inches, to two feet. This is to be effected by conducting the cord which actuates the whirl over an additional pulley, as shewn in fig 3, and

instead of the usual small drum, round which the cord is coiled in other spinning machines, a drum k, of twelve inches diameter is employed, the cord passing from the whirl round the drum k, and round the additional pulley l, to the whirl again, as an endless band. In this way the width of the machine may be narrowed, and consequently a smaller space required for its standing, which economising of room is an important object where a great number of throstle spinning machines are to be placed in one factory, whereas, by the arrangement of the cords in the ordinary machines heretofore used, the width above stated is absolutely essential to their performance.

[*Inrolled July,* 1825.]

To BENJAMIN FARROW, *of Great Tower Street, in the City of London, Ironmonger, for his Inventiou of an Improvement, or Improvements in Buildings, calculated to render them less likely to be destroyed or injured by Fire, than heretofore, which he conceives will be of public utility.*

[Sealed 19th February, 1825.]

THIS improvement consists in the employment of wrought iron joists, for supporting the floors and ceilings of houses, instead of wood, as usual, and which joists, by their peculiar form, afford the means of filling up the interstices between them with bricks, stones, or other incombustable substances, so as to render the partitions between each floor perfectly fire-proof.

Plate XVII, fig. 4, represents one of the said joists, its

end bearing in the wall of the house; fig. 5, exhibits several of these joists, shewn in section, with the slabs of stone laid between them: and also the floor planking above, and the plaster ceiling below. The joists are made by attaching the upper bar *a*, edgewise, to the middle of the lower bar *b*, by means of screws or riveted pins, and the ends of the lower bar being turned down, are let into the brickwork, or stone walls.

When the joists have been thus laid at suitable distances apart, and firmly fixed into the walls of the building, the stone slabs, bricks, tiles, or other materials, of which the floor is to be formed, are placed upon the ledges or rebates of the joists, and are then fastened together with mortar, or Roman cement, which forms a perfectly incombustable partition between the upper and lower story.

This contrivance, is designed to supersede the necessity of arching the rafters, which is sometimes practised in constructing fire proof buildings. The stones being made rough on the under side, by pecking, are fit to receive the plaster for ceiling the lower apartment, and the wooden flooring is laid down on the upper side by screws passed through the wood into the iron.

Roofs of buildings may be constructed in the same way, by laying the rafters upon a slight inclination, for the purpose of allowing rain water to run off into the gutters.

The rafters have been described as made of two bars of wrought iron, screwed or pinned together, but when employed for small houses, they may be made in one piece, by rolling, in the way bars and rods of iron are commonly formed at the iron works.

[*Inrolled August*, 1825.]

See Huxham's Patent for Improvements in iron roofs, Vol. V, page 14.

To John Collinge, *of Lambeth, in the County of Surrey, Engineer, for his Invention of an Improvement or Improvements on Springs, and other Apparatus used for closing Doors, and Gates.*

[Sealed 15th March, 1826.]

These springs are designed to close doors and gates which open upon double hinges, that is, swing in both directions from the door case, inward and outward. The object of the improved spring, is to bring the door when opened back to the centre or place of rest, even with the door jamb.

The contrivance is shewn in Plate XVII, at fig. 6, which is a horizontal view of the box, containing the springs and other parts, the top of the box being removed to display the interior; *a, a,* are the legs of two springs, constructed of thin plates of steel, as coach springs, and formed like tongs. They are secured in their places by any convenient means, and one of the legs of each spring, being confined by pressing against the side of the box, the other leg exerts its elasticity against the notches of the piece *b,* to which the door is affixed as shewn by dots at *c.*

This piece *b,* turns round upon a spherical pivot, which bears in a hemispherical cup, under the box; a contrivance similar to the same patentees improved hinges: (see Vol. VI, page 249,) and which is designed to reduce friction.

The door or gate, having been securely fastened to the piece *b,* when opened as in the direction of the dotted lines *d,* causes the piece *b,* to be turned round, and the springs to be thrown into the positions shewn by dots.

When the door is released, the tension of the spring on one side, impels the piece *b*, into its former position, and the door is thrown back with considerable force to the centre or place of rest *c*.

A variation in the form of the springs is proposed, consisting in the adaptation of two bow springs connected at their ends by swivels, like what are called grasshopper springs, and against the side of one of these a piece similar to *b*, carrying the door, is intended to work, but in this case the piece *b*, must be made square, instead of being notched, as in the former instance.

[*Inrolled September*, 1825.]

To JOSEPH MANTON, *of Hanover Square, in the Parish of St. George, Hanover Square, in the County of Middlesex, Gun Maker; for a certain Improvement in Shot.*

[Sealed 25th March, 1825.]

THIS invention consists in coating the ordinary lead shots, used for fowling-pieces, with a thin surface of mercury, for the purpose of rendering the shots white and cleanly, as well as less liable to injure the quality of the game killed by it; and also more free to pass along the barrels of fowling-pieces than those shots commonly used, which are polished on their surfaces with black lead.

There may be several modes devised by which shots may be coated with mercury, but that mode which the patentee prefers is described as follows:—"I take the

lead shot in preference before it is glazed with plumbago or black lead, and put it into a vessel either of a globular or barrel shape, which can be closed, and which I prefer to be made of iron, and capable of receiving either a revolving movement on an axis, or of being agitated backwards and forwards, or in any other fit and proper manner. Into this vessel I put about one hundred pounds weight of lead shot, and about one pound of mercury or quick-silver, and nearly fill it with water; I then briskly stir or agitate the whole together, until I find on trial that the whole of the mercury or quick-silver has spread or diffused itself, and coated the surface of the shot; after which I wash it well with water. I then spread the shot upon a cloth or canvas, which is stretched on a frame of wood, and rub the shot with a sponge or cloth, which will make it dry quicker."

Should the shot in the course of time loose the silvery appearance, it may be restored again by submitting it to a repetition of the above process.

[*Inrolled September*, 1825.]

To JOHN MARTINEAU, *the Younger, of the City Road, in the County of Middlesex, Engineer, and* HENRY WILLIAM SMITH, *of Lawrence Pountney Place, in the City of London, Esq. in consequence of a Communication made to them by a certain Foreigner, for the Invention of certain Improvements in the Manufacture of Steel.*

[Sealed 6th October, 1825.]

THIS invention, is a mode of giving to ordinary steel a waving appearance similar to that exhibited on the surface

of the best Damascus sword blades. It consists in mixing or combining certain alloys of metals with blister steel, or any other steel which may be commonly used in cast steel works; and these said alloys, are further considered to improve the quality of the steel operated upon; and which when prepared, the patentees designate by the name of *Meteor Steel.*

The alloy is formed by mixing twenty-four parts of zinc, four parts of purified nickle, and one of silver, in a black-lead crucible, the surface being covered with pulverized charcoal, and the lid of the crucible luted on, to prevent the evaporation. The crucible, with its contents, is then submitted to the heat of a steel furnace, until the metals have become fused. The alloy thus formed, is then to be poured out into cold water, for the purpose of rendering it brittle, and when cold, is granulated or pounded into small pieces.

This preparation (called meteor powder), being now ready for use, the improved steel is made in the following manner:—Twenty-four pounds of blister-steel, or such other steel as is commonly used in cast-steel works, is put into a crucible or melting-pot of the usual kind; to this is to be added, eight ounces of the alloy, or meteor powder above described, six ounces of pounded chromate of iron, one ounce of charcoal-powder, two ounces of quick lime, and two ounces of porcelain clay. These, when properly acted upon by the fire in the furnace, produce steel of an excellent quality, and capable of exhibiting the wavy and beautiful appearance of Damascus steel.

In order to vary the appearance of the steel, more or less of the meteor powder may be introduced; the quantity of charcoal must also be varied according to the required hardness of the steel, and which will depend, in

some measure, upon the quality of the steel prior to the process.

The quick-lime and porcelain-clay being employed as fluxes may be varied in quantity without materially affecting the process, and all the proportions of the metals may also be varied in a slight degree, without any considerable injury to the steel, but those above-stated are preferred. The furnaces and crucibles at present in use, in cast steel works, may be used in the manufacture of the meteor steel, and the steel, when made as described, may be cast and tilted as usual.

In order to draw out, and exhibit the wavy and beautiful appearance of Damascus steel, upon any article manufactured from this improved alloy of steel, the surface being first polished, is to be rubbed over with any acid which will act upon steel, and as the appearance is required to be more or less prominent, the action of the acid is to be applied for a greater or less continuance; various acids will answer the purpose, but the patentees prefer using a mixture of one part nitric-acid, to nineteen parts distilled vinegar.

As soon as the steel acquires the intended appearance, the acid must be carefully washed from its surface, and being rendered perfectly dry, the operation ceases, leaving the polished steel waved, and resembling the beautiful mottled surfaces of Damascus sword blades.

[*Inrolled April,* 1826.]

Hill's Impd. Rail Road and Carriages.

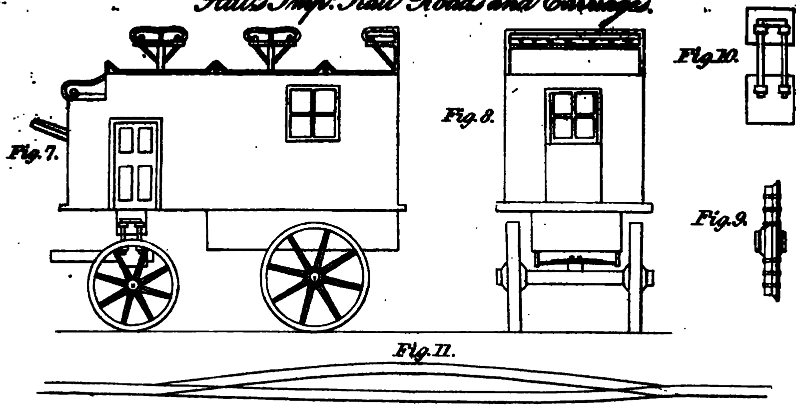


Fig. 7. Fig. 8. Fig. 10. Fig. 9. Fig. 11.

Fox's Distillers Safe.

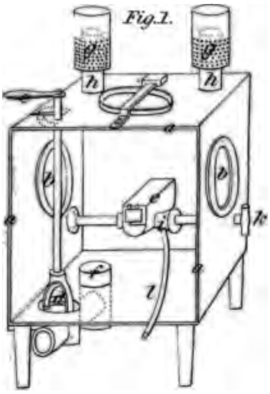


Fig. 1.

Collinge's Door Spring.

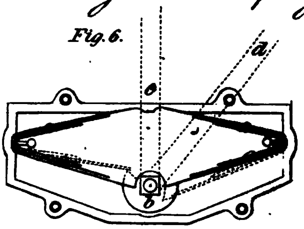


Fig. 6.

Farrow's Iron Joists.

Fig. 5.

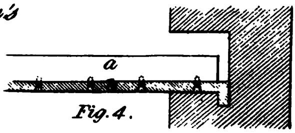
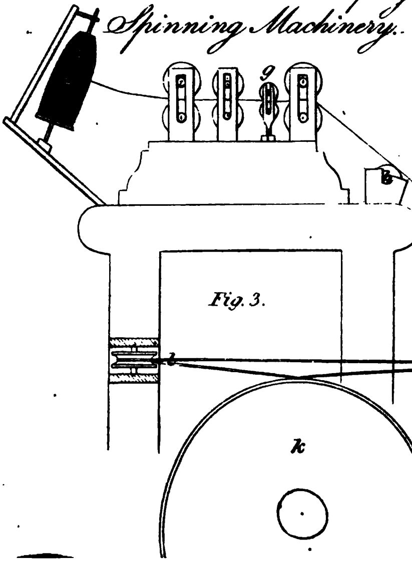


Fig. 4.

Andrew Tarlton & Shepley's Spinning Machinery.



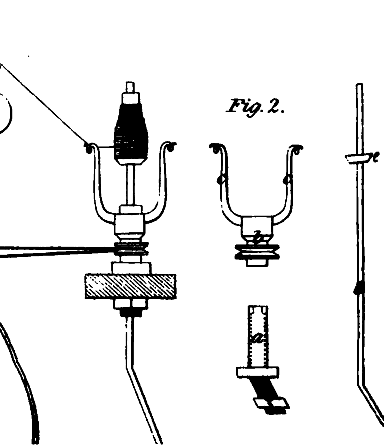


Fig. 3. Fig. 2.

To THOMAS HILL, *the Younger, of Ashton-under-Line, in the County of Lancaster, Land Surveyor, and Engineer, for his Invention of certain Improvements in the Construction of Rail-ways, and Tram-roads, and in Carriages to be used thereon, and on other Roads.*

[Sealed 10th May, 1825.]

THESE improvements are described as consisting, first, in the form or construction of a carriage, calculated to carry passengers and goods on rail-ways, tram-ways, and on common roads; secondly, in a new mode of attaching wheels to such carriages, and of adapting loose flanges to the said wheel, by which they may be enabled to run upon rails, or upon ordinary highways; thirdly, constructing railways of cast-iron pipes instead of solid rails as usual; and fourthly, a cheap and convenient method of constructing the turnings-out, or sidings, for enabling two carriages to pass each other upon a line of rail-road.

Plate XVII, fig. 7, is a side view of the carriage; fig. 8, a back view of the same. The passengers are to be admitted to the interior by the door behind, and it is intended to contain twelve persons within, and twenty without. The luggage is to be placed in the front part, the carriage being calculated to hold about half a ton; the access is through the door in the side.

Loose wheels are to be attached to the fixed axles of this carriage, which the patentee states is new as respects rail-road carriages, it being the ordinary practice to fix the running wheels to revolving axles. When these carriages are to travel on rail-ways, flanges are to be attached to the wheels, by means of bolts or screws passed through the fillies or spokes, as fig. 9, which flanges may be re-

moved when the carriage is to travel on common roads. It is further proposed to employ a staple to lock the front axle-tree on each side, as at fig.10, for the purpose of preventing its turning round; this is only when the carriage is to move upon a rail-road. Some observations are made, which we do not clearly comprehend, respecting eye-bolts to be attached to the carriage, and slide upon a rod in front, by which eye-bolts the carriage is to be drawn.

The improvement in the construction of rail-roads is to make them of cast-iron pipes, supported upon suitable sleepers, conceiving that hollow tubes of cast iron are much stronger than bars, or any other description of rails.

The economical contrivance for turning out or passing two carriages upon a line of rail-way, is exhibited at fig. 11, and consists in placing two lines of rails, issuing from one line at small angles, and after extending a sufficient width to allow the carriages to pass, joining in again at the same small angles in the manner shewn.

The patentee says, "I claim the making or benefit of applying and using loose wheels, loose or moveable flanges, stays or staples, eye-bolts or loops, and the form of carriages, rail-ways, and tram-roads, as above described."

It is perfectly unnecessary for us, in discussing the novelty of the plans herein proposed, to refer to any of the patents for rail-roads or carriages which have preceded this, the absurdity of the patentee's claims must strike every reader; and considering the mass of scientific knowledge which pervades the neighbourhood from whence this pretended invention emanates, we are absolutely astonished to see such nonsensical suggestions dignified with the title of Patent.

[*Inrolled November*, 1825.]

Novel Inventions.

Perkins's Steam Engine.

So much has been said by us, and reiterated by our contemporaries, relative to Perkins's projected improvements on the steam-engine, and so little product of a nature calculated to satisfy public expectation, that it is with no small degree of diffidence we again mention the subject. We consider, however, that it is our duty as public journalists, and particularly so as standing foremost in the ranks of mechanical science, to present our readers with every glimmer of light that may afford the prospect of re-kindling the embers of this important subject.

Mr. Perkins has now completed an engine, which he represents as embracing the ultimatum of his present intentions, and which is designed to shew the absolute realization of his anticipated hopes, or their decided failure. We should however observe, that the possibility of the latter, Mr. P. has never for a moment admitted, and now considers that he has only perfected those plans he contemplated from the first, and which required but patience and time to bring to maturity.

The very transcient view of the engine which we have been enabled to take, precludes the possibility of our describing its construction, besides we should, by so doing, anticipate a more perfect account, which we hope to give hereafter. There are many parts, which exhibit considerable novelty and ingenuity, and the whole is comprised in a very compact form. The power of the engine, which stands upon a base of about four feet square, is said

to be capable of variation, from fifteen to thirty horses, according to circumstances, connected with the economization of fuel. It has not yet been exhibited in operation, but that is expected to take place in a few days.

At present we beg to be understood, as merely reporting progress, and not in any respect as venturing an opinion as to the result, we have only seen the engine for a few minutes in a state of inertia; by the time of publishing our next number, we probably shall be in a situation to say something that may be satisfactory, if not final.

Yandal's Refrigerator.

We noticed in our present vol. at page 148, a new apparatus for heating and cooling fluid, and expressed our belief that it would be found of very considerable utility, employed as a substitute for a distiller's worm. We have now great pleasure in stating that our anticipations are realized, and that one of these apparatus is in successful operation at the distillery of Messrs. Haworth and Co. Cloak Lane, Thames Street.

The apparatus under consideration is formed of thin but broad sheets of copper, and occupies a space, altogether not exceeding a cube of two feet square. The quantity of cold water employed to effect a condensation of the spirit is not more than one quart per minute, though that run from the large worm tub which heretofore performed the same business, amounted to several gallons in the same space of time.

It is stated by the parties who are now using it, that they can produce spirit of the required degree of concentration by this apparatus in two operations, which heretofore by their old process required four.

The importance of this improved refrigerator, will with-

out doubt soon draw the attention of the distilling trade, and from the compactness of its form, the economy of water employed when in operation as well as the trifling cost of the apparatus, there can be but little doubt of its ultimately superseding the cumberous worm and tub, or any other kind of refrigerator heretofore used.

The specification of the patent will be inrolled shortly, we shall then take an early opportunity of giving its details to our readers.

Improved Truck.

Mr. L. W. Wright, the inventor of the ingenious machinery for making pins, has very recently invented a truck of a peculiar and novel kind, principally designed for the removal of sugar hogsheads, and wine or brandy pipes, in the warehouses of the dock and wharfs, near the Thames. The truck takes the hogshead, or other cask, from a cart or crane, and after conveying it to its place of destination, raises it up to any required elevation, from whence it may be conveniently slidden on to the keep or pile of hogsheads, or other casks, or rolled away upon the floor of the loft, or elevated part of the warehouse.

In a similar way, the truck also takes a hogshead or other cask, from an elevated situation as from a pile or loft, and brings it down without the dangerous and laborious exertion of porters lifting such ponderous bodies.

It appears, that so highly esteemed is this invention, that the West India Dock Company have presented Mr. W. with £1000, as a reward for his ingenuity in bringing to perfection an apparatus which is likely to prevent many casualties and not unfrequently the loss of life.

Self acting Piano Forte.

The Dublin Journal gives a long notice of the mechanism of an ingenious instrument of this kind, stating that it performs, with extraordinary effect, some of the most classical and difficult music, and that great difficulties have been surmounted by the inventors. It combines the utmost rapidity and brilliancy with distinctness and neatness, and they venture to affirm, that there are few players of the piano-forte that can equal it, in these qualities. Its harmony is necessarily more full than can be produced by eight fingers, the elements of chords having no other limit than the extent of its scale. The instrument not only plays the usual piano-forte part of a piece, but takes in also, the subject of some parts of the score; its *crescendo* and *dimuniendo* are graduated with more precision than can be effected by means not mechanical, the time cannot be otherwise than perfectly equable throughout, yet where pathos is to be expressed, the time can be retarded or accelerated, in any degree. In short, this admirable instrument manifests all the capabilities of a living performer, and superadds qualities derivable only from mechanical agency.—The mechanism is simple; it consists of a cylinder which turns on its axis, and is acted on by a coiled spring, and regulated by a fly wheel. On the surface of the cylinder, a proper arrangement of brass pins is formed, each of which, in passing under a rank of levers, elevates one end of the required lever, and depresses the other. The pressed end, pulls down with it a slender rod, which is connected by a slide with the tail of a bent lever, on the further end of which is the hammer which strikes the string.—The slides can be shifted further from, or nearer to, the axis, on which the hammer lever turns, and thus the stroke of the hammer is

made feeble, or strong, to any required degree. When wound up, the instrument will continue to play for a considerable time; and it is provided with a set of keys like the ordinary piano-forte, so that a person may accompany the instrument, or play a duet with it, the effect of which is said to be beautiful.

Fine Black Colour.

TO THE EDITOR OF THE FRANKLIN JOURNAL.

SIR—Having, some time since, discovered a method of producing the finest black imaginable, and knowing that your valuable Journal is a receptacle for any improvement in the arts, I send you the following recipe:

Take some camphor, and set it on fire; from the flame will arise a very dense smoke, which might be collected in the same way as the lamp-black, in the manufactories of that article. As I have not required much at a time, I have generally collected it on a common saucer, by holding it over the flame. This black, mixed with gum arabic, is far superior to any India ink I have ever seen imported; I have also used it ground in oil.

Your's, &c. T. V. PETICOLAS,

Nashville, Tenn. Aug. 1st, 1826.

Miniature painters, who use colours in small quantities, sometimes obtain a most beautiful and perfect black, by using the buttons which form on the snuff of a candle, when allowed to burn undisturbed. These are made to fall into a small thimble, or any other convenient vessel which can be immediately covered with the thumb, to exclude the air. This is found to be perfectly free from grease, and to possess every desirable quality.

[*Editor.*

Polytechnic and Scientific Intelligence.

ASTRONOMICAL SOCIETY.

Dec. 8.—There was read a letter from Mons. Flaugergues, of the observatory at Viviers, on a comet discovered there March 29th, 1826. M. Gambart, of Marseilles, had informed M. Flaugergues, that he had discovered on the 20th of March, a comet, which shortly afterwards moved to the constellation Taurus.—M. F. on looking for that comet, perceived under the left arm of Orion, a white round nebulosity, scarcely visible, which he supposed was the comet announced by M. Gambert. Looking for the same comet on subsequent evenings, the only one of his instruments through which it was visible, was an achromatic telescope whose double object-glass was of 40 inches and 6 lines focal distance, and 30 lines and a half of aperture ;— this telescope has an eye-glass of 2 inches focal distance, and is of admirable clearness. It is mounted on a parallactic foot, but required the appropriation of a micrometer, before it could be well applied to this class of observations. On the 4th, 5th and 6th of April, he made some good observations on the comet with this apparatus ; on the 7th he could not find it, nor has he seen it since. He had no suspicion that this was any other comet than the one observed by M. Gambart, until he compared his own observations with those recorded in No. 4, vol. xiv. of Zach's *Correspondance Astronomique*, from which he at once saw that his observations and M. Gambart's related to two different phænomena. M. Flauger-

gui has communicated his observations on the evenings of the 4th, 5th and 6th of April; and though they are nearer together than could be wished, he has deduced from the corresponding geocentric places, the following elements of the orbit, regarded as parabolic:

Inclination	9° 32' 26"
Longitude of the ascending node	193 31 11
Longitude of perihelion	222 53 32
Perihelion distance	0·646146

Passage of perihelion, April, 26·95973; M. T. at

Motion direct. Viviers.

It is only in this last element, that this comet resembles the comet announced by M. Gambart.

There was next read a letter from M. Gambart to the Foreign Secretary, dated Marseilles, 29th of October 1826, announcing his discovery, the preceding evening, of a Comet having then 14^h 38^m A R, and 36°·1 of December, North.

From a subsequent communication to different astronomers, dated Marseilles, 22nd of November, which was also read, it appears that M. Gambart from observations of the 7th, 8th, 9th, and 10th of November, computed the elements of the orbit, and thence deduced a curious anticipatory result. He gives for

Passage of the perihelion Nov.	18.8085 M.T. from midnt.
Perihelion distance	0.02384
Longitude of perihelion.......	314° 57' 28"
Longitude of the ascending node	236 9 54
Inclination................	19 59 24

Motion retrograde.

From these elements, it was anticipated that the comet would transit the sun's disc on the 18th of November; and that

The Immersion would take place at ...... $5^h\ 25^m$ A.M.
Passage through the node 7 1
Shortest distance of comet from ☉'s centre 2′ 40″
Emersion of comet from disc 8 38

The expected phænomenon was not observed in England.

There was next read a letter to the President from Professor Santini, dated Padua, 6th November 1826, and containing various astronomical observations. M. Santini commences by detailing observations of a Comet discovered by M. Pons at Florence, the 7th of October. These observations extend from 29th of August to 5th of November. From those of 30th of August, 28th of September, and 20th of October, M. Santini has computed the following elements, for a parabolic orbit; though the true orbit he says would rather seem to be hyperbolic.

Passage of the perihelion October $9^{d\cdot}2310$ M.T. at Padua.
Log. perihelion distance ...... 9 .93028
Longitude of perihelion...... 57° 25′ 6″
Longitude of the node 43 9 5
Inclination 25 30 7
Motion direct.

M. Santini communicates, 2dly, Observations of the planet Ceres near its opposition to the Sun in 1826, viz. from 26th of June to first of July inclusive. 3dly, Observations of the planet Pallas near its opposition in 1826, viz. from 26th of June to 29th inclusive. 4thly, Observations of the planet Vesta near its opposition in 1826, viz. from August 13th to 23d inclusive. M. Santini has compared these observations with the geocentric positions of Pallas and Vesta, as computed by Professor Encke, and published in Bode's *Jahrbuch* for 1828, pages 157, 160. The mean differences are, for Pallas in AR + 3″.96, in decl.—0.54: for Vesta in AR + 11′.43 in decl.—4′.32.

In a postscript dated 7th of November, M.S. announces

the discovery of another Comet by M. Pons, in the constellation Bootis, on the 22nd of October.

Lastly, There was read a letter from Colonel Beaufoy to Lieut. Stratford, R. N., containing Observations on the solar eclipse of November 28th, made by Lieut. G. Beaufoy, R.N., Bushey Heath.

Nov. 28th. Solar eclipse, Began $21^h\ 46^m\ 4^s$; M.T. Bushey
Ended 23 58 1.9, do. do.

No spot visible on the sun's disc:—Edge of the moon uneven, Her horns blunted.

Vermont Gold.

A beautiful piece of native gold, weighing nearly ten ounces, was lately found in the town of Newfane, Vermont. It was picked up by a boy near a small brook, and was studded with crystals of quartz. We have been favoured by Mr. French of this city, with the perusal of a letter from a friend in that place, from which we extract the following particulars. "A mass of native gold, weighing nearly ten ounces, has been found in this village, upon the farm of Samuel Ingram. In its general appearance, it strikingly resembles the North Carolina gold—specific gravity 16.5—considered worth 89 cents per pennyweight. It was found on the bank of a stream, which empties into the branch opposite this village." We have seen another letter, which says that the inhabitants of the village "are about turning out on a grand search for more of the precious metal, and every witch-hazle thereabouts, has been subsidized for a mineral rod!" We understand that a gentleman in that neighbourh-

is preparing a full and scientific description of the gold, and the region in which it was found.

Suspension Chain Bridge at Hammersmith.

The construction of a chain bridge of suspension across the Thames at Hammersmith is proceeding with great rapidity, the two piers of stone, over which the chains are to be distended, are already erected in the water about fifty feet from the shore, on each side, and the abutments, to which the ends of the chains are to be made fast, are also complete.

Several chain cables are thrown across, and to these are attached a frail platform of planks, for the purpose of enabling the workmen to arrange the ultimate lengths of chains which are to support the side of the roadway.

The ariel appearance of the structure in its present state, is truly singular, as seen from the distance, it is not however, in that state of forwardness, which would authorise us at present to speak of its plan, we shall, as the work advances, take further occasion to notice its progress and construction.

American Patents.

Improvement in the combined lever cotton press, May 10, E. Venear, North Carolina.

In relieving water wheels from obstructions of backwater, May 10, Jare Benedict, New York.

In the machine for thrashing grain, May 10, John Shaw, Maine.
In covering, or platting, brick kilns, May 10, S. R. Bakewell, Virginia.
In the machine for excavating canals, &c., May 10, Lot Forrester, Connecticut.
In the method of forming schemes and tickets of lotteries, and for drawing the same, May 16, Edward Grattan, Rhode Island.
In boy's dresses, May 16, Charles Herwick, New York.
In sponges for artillery, May 16, John Gethen, Philadelphia.
In making cordage, May 17, E. Bartholomew, Boston.
In making chain cables, called the swedge hammer, May 17, E. Bartholomew, Boston.
In the art of manufacturing bread, May 18, E. Treadwell, New York.
In the mode of constructing water wheels and flumes, May 18, Asa Messer, Rhode Island.
In the circular saw, May 18, Wm. Kendall, jr. Maine.
In the family spinning machine, May 20, J. Watt, A. Prest, and G. Freeborn, Ohio.
In the machine for sawing felloes for wheels of carriages, &c. May 20, P. Collier, New York.
In the art of ornamenting walls, ceilings, &c. May 20, Wm. West, Philadelphia.
In furnaces for heating iron hoops for carriages, May 22, Garret Post, New York.
In pumping water for propelling machinery, May 22, Liscomb Knap, New York.
In the machine for raising water for domestic purposes, May 22, Liscomb Knap, New York.
In the press for pressing out cider, oil, and other liquids, May 20, Wm. H. Hoeg, Ohio.
In pressing Leghorn, straw, and other hats, May 23, R. Tyler, and B. P. Coston, Philadelphia.
In the mode of loading carts, or waggons, with earth, May 23, Noah Osborn, Connecticut.
In the steam-packed rotary steam engine, May 25, S. Fairlamb, and D. Bruce, jr. New York.
In the thrashing machine, May 25, Seth Ballou, Maine.
In the construction of saddles, May 27, Wm. H. Collins, Ohio.

In removing earth from canals by inclined rail-way, May 29, Wm. H. Doll, Pennsylvania.

In the machine for finishing or ironing fur, wool, or other hats, May 31, J. Cooper, and T. Barnett, Philadelphia.

In the machine for removing earth, June 1, P. Reading, New Jersey.

In the construction of wind mills, June 1, Wm Coburn, Maine.

In the lever press for packing cotton, and other articles, June 3, Charles Williams, Virginia.

In the thrashing machine, June 3, P. Reading, New Jersey.

In the springs to a waggon-seat, June 6, Walter Jones, Connecticut.

In the construction of rail ways, so that teams may pass each other on the same, June 6, J. Brown, and G. W. Robinson, Rhode Island.

In the construction of chimneys, June 8, Abraham G. D. Tuthill, Utica, Oneida Cy. New York.

In the turning lathe, June 8, John Hunt, Shutesbury, Massachusetts.

In grist mills, June 9, Francis Harris and John Wilson, Troy, New York.

In the mode of taking the cotton from the doffer, June 9, Elijah Thompson, Lowell, Massachusetts.

In the machine for making boots and shoes, June 9, Elijah Thayer, Leicester, Massachusetts.

In the machine for moulding bricks and tile, June 9, Ezra Fisk, Fayette, Maine.

In the mach.ne for roping and spinning cotton, June 10, William Carmichael, Sand Lake, New York.

In the rolling or twisting roving of cotton, June 14, William Whitehead, jr. Patterson, New Jersey.

In the instrument for operating for the cancer, June 14, Thomas R. Williams, Philadelphia.

In Paul Pillsbury's machine for shelling corn, June 15, Jeremiah Dodson, Guilford, North Carolina.

In the loom, June 14, Cornelius Bergen, New York.

In the mode of emptying the well bucket, June 15, Elijah Willard, Egremont, Massachusetts.

In the machine for spinning wool, tow, &c. June 15, John Corril, and William P. Rogers, Harpersfield, Ohio.

In the machine for drawing canal boats for repair, June 16, Seth C. Jones, Rochester, New York.

In the percussion lock, for rifles, muskets, &c. June 16, Joseph Medbury, and Silvester Kellogg, Rochester, New York.

In the mode of applying water to water-wheels, June 19, D. M'Kenzie, M. L. Barber, S. Dean, and John C. Narlghton, Caledonia, New York.

In the machine for bending tire for wheels, June 19, Walter James, Ashford, Connecticut.

In the machine for weighing canal boats, June 20, Benjamin Bull, New York.

In relation to the evolution and management of heat, June 21, E. Nott, New York.

In the shaving and smoothing of wood, June 21, A. Brownson, New York.

In the machine for spinning flax and hemp, June 22, W. Hunt, and W. Hoskins, New York.

In the buoyant dock, June 22, Maximin Isnard, New York.

In the machine for pressing unburnt brick and tile, at one operation, June 24, Ephraim Mayo, Maine.

In the machine for planting and working Indian corn, June 24, William Ross, Pennsylvania.

In cutting plugs for waists and decks of shipping, June 28, C. Josselyn, New York.

In the mode of sawing wood, slitting boards, and sawing felloes, by machinery, at one operation, June 24, B. Ruggles, Vermont.

In grist mills, June 29, Isaac Ryon, Massachusetts.

In the "Franklin Duplex Steam Generators," July 1, John M'Curdy, England.

In the 30 hour wooden wheeled clocks, July 5, Eli Terry, Connecticut.

In the washing machine, July 6, Seth Church, New York.

In the steering wheel, July 10, E. S. Coffin, Boston.

In steering vessels by the compound lever wheel, July 10, Rhodes Kinsbury, and Edward Rowse Maine.

In the braiding machine, July 10, John Thorpe, Rhode Island.

In the scale for draughting garments of every variety of fashion and form, July 10, Nathan B. Starr, Philadelphia.

In the mode of preserving timber used in the construction of wooden locks for canals, July 10, Simeon Guilford, Pennsylvania.

In the cleave harrow for clearing swampy grounds, July 11, Lemuel Tam, Delaware.

In manufacturing salt by evaporation, and in heating liquids by the use of stoves and stove pipes immersed in cisterns, July 12, Stephen T. Conn, George-Town, Delaware.

In raising and removing earth, opening water courses, and making canals, July 14, Cyrus Barnard, Pennsylvania.

In making cartridges for blasting rocks, July 17, John B. Ives, Pennsylvania.

In the mode of letting water on water wheels, July 18, Thomas Key, Georgia.

In the steam generator, July 20, Stephen T. Conn, George Town, D. C.

In the mode of applying steam power to the sawing of timber, July 21, R. Nichols, New Orleans.

In spinning cotton and wool, July 24, Joseph Hathaway, New York.

In evaporating liquids, July 26, Charles Sholes, New York.

In the construction of grist mills for grinding Indian corn, &c. July 31, J. Northrop, Connecticut.

In the machine for grinding shelled corn, &c. July 31, J. Webster, Philadelphia.

James Barron, of Virginia, for an improvement, denominated the carrying and lifting dock, for building and repairing vessels, August 2nd.

Henry Botswick, of New York, for a method of representing by lines, consistent with a scale of time, the kindred, geneology, cronology, and succession of persons, distinguished in history or fable, August 2nd.

Cotton Foss, of Ohio, for the application of steam, to the blast of furnaces, called a steam power furnace August 2nd.

Elisha Crowell, of Maine, for a method of moving the trip hammer, August 4th.

H. Branch, of New York, for a mode of turning any number of augers, centre-bits, &c. in making mortices of any dimensions or proportions, August 7th.

John A. Smith, of Connecticut, for an improved mode of elevating liquors, from a lower to an upper room, August 7th.

Z. S. Holdridge, and H. S. Lawson, of New York, for an improvement in the plough, August 9th.

S. Lehman, of Philadelphia, for an improvement in the fire-ladder, August 9th.

J. Hines, and W. Bain, of New York, for dressing flax or hemp, rolled, or unrolled, August 12th.

Joseph H. Laning, of Tenessee, for a method of working steam, twice over, or working two steam-engines with the same steam, August 12th.

Joseph Hastings, of Massachusetts, for a method of making lamp-black, August 15th.

Joseph Clarkson, of Baltimore, for a machine, for laying and twisting cotton, and other cords, August 16th.

Thomas Van Riper, of New Jersey, for a trussle bobbin or spoole, to be used in spinning factories, August 16th.

Joseph Eve, of England, for an improvement in steam engines, August 16th.

William Burton, of New York, for a machine for washing clothing, or cloth, August 16.

Joseph H. Schreiner, of Philadelphia, for an improved auger, August 17th.

John Floyd, of Maine, for a floating dry-dock, called Floyd's floating machine, for lifting ships, or vessels out of the water, for the purpose of repairing them, August 19.

Benjamin Wilse, of New York, for improved suspenders, August 19th.

Z. Parkhurst, of Massachusets, for a substitute for oil, and which may be mixed with oil in proper proportions, and applied to wood, before carding, August 19th.

Joseph H. Schreiner, of Philadelphia, for a mode of setting saws, August 19.

J. R. Wheeler, and J. B. Wheeler, of New York, for a machine for roping and spinning wool and cotton, August 28th.

William H. Cantelo, and Robert M. Kerrison, of New York, for a *Jubilee Stock*, August 30th.

Prizes Proposed

BY THE

Society for the Encouragement of National Industry; Paris, to be distributed in the Years 1827, 1828, 1829 *and* 1830.

Petitions, Descriptions, Drawings, Machines, Models, or Patterns, to be delivered to the Secretary on or before the 1st of May in each year.

FOR THE YEAR, 1827.

Mechanical Arts.

	FRCS.
For the fabrication of bricks, tiles and square tiles, by machinery - - - -	2,000
For improvements in sawing mills, moved by water -	5,000
For the application of hydraulic, or paddle wheels on a large scale, in manufactories, &c. - - - -	6,000
For the fabrication of steel wire, fit for making sewing needles - - - - -	6,000
For the fabrication of sewing needles - - -	3,000
For the construction of simple and cheap utensils, suitable for extracting sugar from beet root; two prizes, one of 1,500 francs, the other of 1,200 francs, together - - -	2,700
For the construction of a quern adapted to taking off the rind or husks from dried vegetables -	1,000
For the construction of a machine fit for razing the hair from skins employed in hat making -	1,000

Chemical Arts.

For the fabrication of glue - - -	2,000
For the establishment of a manufactory on a large scale, for the making of refractory crucibles -	3,000
For the fabrication of isinglass - -	2,000
For the discovery of a fractitious ultramarine -	6,000
For the fabrication of paper, from the bark of the paper, mulberry tree - - -	3,000
For the fabrication of wool fit for making common hats - - - -	,600
For a method of foliating mirror glasses, by a process different from those already known - -	2,400

	francs.
For improvements in the materials employed in copper-plate printing - - -	1,500
For the discovery of a metal or alloy, combining less oxygen than iron or steel, fit to be employed in machinery for separating soft alimentary substances	3,000

Economical Arts.

For the preparation of dried meats - -	5,000
For improvements in the construction of furnaces; three prizes of 3,000 francs each - -	9,000
For the discovery of a matter which may be moulded like plaster, and capable of resisting the action of the air as well as stone - - -	2,000

Agriculture.

For a detailed description of the best process of industry, as applied to manufacturing, which has, or might be exercised by the inhabitants of the country—first prize - - -	3,000
Second ditto - - - -	1,500
For the construction of a mill fit for the cleaning of French wheat (sarrazin) - -	,600
For a seed bed of Scotch pines (pinus rubra) -	,500
For the introduction of *Artesian* wells into any country, where those wells did not previously exist, three gold medals, of the value of five hundred francs each, making - - -	1,500
For the exportation into France, and culture of plants useful to agriculture, to the arts and manufactures, First Prize - - - -	2,000
Second ditto - - - -	1,000

FOR THE YEAR 1828.

Chemical Arts.

For the preparation of flax and hemp, without steeping	6,000
For improvements in lithography; ten prizes -	6,700
For improvements in the fabrication of guts, for cords, for musical instruments - -	2,000
For improvements in the dying of hats -	3,000

Economical Arts.

For the discovery of a very economical method of preserving ice - - - -	2,000

Agriculture.

For a seed bed of Northern or Corsican pine trees, known by the name of *Laricios* - -	1,000

FOR THE YEAR, 1829.

Chemical Arts.

	FRCS.
For improvements in the casting of iron -	6,000
For improvements in the moulds for pieces of cast iron, destined for further workmanship - -	6,000

FOR THE YEAR, 1830.

Agriculture.

For the planting of sloping lands—first prize -	3,000
Second ditto - - - -	1,500
For a determination of the effects of lime, when employed as a compost - - -	1,500
Total	115,000

The value of the prizes proposed and placed at the disposal of the Meeting for 1827 amounts to -	76,300
Those for the year 1828 - -	20,700
Those for the year 1829 - -	12,000
Those for the year 1830 - -	6,000
Total	115,000

CHARLES ALBERT.

To the Editor of the London Journal of Arts, &c.

New Patents Sealed, 1826.

To Thomas Morrison, of Valegrove, Chelsea, in the County of Middlesex, Esq. for his invention of a method or process of rendering Boots, Shoes, and other articles water-proof—Sealed 22nd December—6 months for inrolment.

To David Redmund, of Greek Street, Soho, in the County of Middlesex, Engineer, for his invention of certain improvements in the construction and manufacture of hinges—22nd December—6 months.

To Elijah Galloway, of the London Road, in the Parish of St. George the Martyr, in the County of Surrey, Engineer, for his invention of an improved rotatory steam-engine—29th December—6 months.

1827.

To John Whiting, of Ipswich, in the County of Suffolk, Architect, for his invention of certain improvements in window sashes and frames—9th January—2 months.

To James Frazer, of Houndsditch, in the City of London, Engineer, for his having invented an improved method of constructing capstans and windlasses—11th January—6 months.

To James Frazer, of Houndsditch, in the City of London, Engineer, for his having invented an improved method of constructing boilers for steam-engines—11th January—6 months.

To William Wilmot Hall, of the City of Baltimore, in the United States of America, at present residing in the City of Westminster, in the County of Middlesex, Attorney at Law, in consequence of a communication made to him from a Foreigner residing abroad, for a new invention of an engine for mooring and propelling ships, boats, carriages, mills, and machinery of every kind—15th January—2 months.

To William Hobson, of Mark Field, Stamford Hill, in the county of Middlesex, gentleman, for his new invented improved method of paving streets, lanes, roads, and carriage-ways in general—15th January—2 months.

To James Neville, of New Walk, Shad-Thames, in the county of Surrey, Engineer, for his new invented improved carriage to be worked or propelled by means of steam—15th January—6 months.

To William Mason, of Castle Street, East, Oxford Market, in the City of Westminster, and County of Middlesex, patent axle-tree maker, for his invention of certain

improvements in the construction of those axle-trees and boxes for carriages, which are usually termed or known by the names of mail axle-trees and boxes—15th January—2 months.

To Robert Copland, of Wilmington Square, in the County of Middlesex, Gentleman, for his invention of certain improvements upon a patent already obtained by him for gaining power—16th January—15 months.

METEOROLOGICAL JOURNAL, December 1826, and January 1827.

1826.	Thermo.		Barometer.		Wind.	Weather.
	Max	Min.	Morn.	Even.		
Dec.						
28	37	34	30.33	30,27	N. E.	Slight frost—fog
29	44	38	30,23	30,14	W.	Cloudy—fog—wind
30	47	43	30,—	30,05	N·W.—W.	Fair—clear—high wind
31	48	43	30,04	29,94	W.	Ditto—cloudy
1827.						
Jan.						
1	46	42	29,78	29,34	W.	Cloudy—Wind and Rain $\frac{1}{8}$in.
2	37	30	29,34	29.38	N.W.—N.	Ditto—slight snow
3	27	20	29,35	29,41	N.	Hard frost—snow
4	28	16	29,51	29,65	N.	Ditto—ditto
5	30	26	29,93	30,08	N.	Ditto—ditto
6	34	28	30,07	29,95	W	Thaw—rain and wind
7	42	34	29,92	29,87	W.—N.W.	Ditto—cloudy—fog
8	50	46	29,81	29,64	W.	Ditto—ditto—wind
9	46	39	29,68	29,72	N·W.	Stormy—ditto
10	44	39	29,68	29,24	W.—S. W.	Ditto—ditto—Rain $\frac{5}{8}$ inch
11	39	36	29,18	29,11	W.—N. W.	Ditto—sun and slight frost
12	36	32	29,18	29,72	N.W.—N.	Ditto—ditto—ditto
13	44	32	29,72	29,52	W.—S.W.	Cloudy—frost—rain
14	52	33	29,05	29,56	S.W.—W.—N.W.	Stormy—very high wind—rain
15	37	32	29,93	30,02	N.—N. W.—W.	Frost—fair—wind
16	46	38	29,81	29,87	W.—N.W.	Cloudy—rain
17	40	34	30,02	30,03	N.	Ditto—ditto—slight
18	38	30	30,03	30,05	N·E·	Ditto—fog—slight frost
19	35	28	30,11	30,12	N E.	Ditto—ditto—ditto
20	32	27	30,03	29,82	N.E.	Cloudy—frost
21	28	24	29,76	29,43	N.E.	Ditto—ditto—snow
22	29	21	29,41	29,52	N.—N. E.	Snow—hard frost
23	29	25	29,48	29,35	N.	Ditto—ditto
24	32	27	29,40	29,49	W.—N.W.	Snow—ditto
25	30	15	29,49	29.54	N.	Hard frost—fog evening
26	31	14	29,51	29,57	W.—N. W.—N.	Ditto—slight snow

Hitchen, Herts. WATSON PERKS.

D.	H.	M.	S.	
2	12	17	27	♃'s 2d Satt. will immerge.
3	9	6	0	☽ in □ first quarter.
5	0	0	0	Clock before the ☉ 14′ 21″
5	6	0	0	☽ in conj. with ε in Taurus.
5	22	0	0	☽ in conj. with ι in Taurus.
6	14	0	0	☽ in conj. with ξ in Taurus
6	16	14	20	♃'s 1st Sat. will immerge.
7	14	0	0	☽ in conj. with γ in Gemini.
19	0	0	0	Clock before the ☉ 14′ 35″.
10	12	0	0	☾ in conj. with 1 α in Cancer
10	13	0	0	☾ in conj. with 2 α in Cancer
11	10	23	0	Ecliptic Opposition or ☺ Full Moon.
11	19	0	0	☾ in conj. with π in Leo.
13	18	0	0	☾ in conj. with υ in Leo.
13	22	0	0	☿ in conj. with γ in Capri.
14	22	0	0	♂ in conj. with δ in Capri.
15	0	0	0	Clock before the ☉ 14′ 29″
15	19	0	0	☾ in conj. with α in Virgo.
15	20	0	0	☾ in conj. with ι in Virgo.
16	17	24	47	♃'s 2d Sat. will immerge.
17	8	0	0	☾ in conj. with 2 α in Libra
17	12	44	57	♃'s 3d Sat. will immerge
18	5	0	0	☾ in conj. with κ in Libra
18	10	0	0	☾ in conj. with λ in Libra
18	13	10	0	☾ in □ last quarter.
18	15	0	0	☾ in conj. with 1 β in Scorpio
18	17	0	0	☾ in conj. with 2 β in Scorpio.
18	18	0	0	☾ in conj. with γ in Scorpio
20	6	9	0	☉ enters Pisces.
19	21	0	0	☾ in conj. with ρ in Oph.
20	0	0	0	Clock before the ☉ 14′ 6″
20	18	0	0	☾ in conj. with 1 μ in Sagit
20	19	0	0	☾ in conj. with 2 μ in Sagit.
21	20	0	0	♀ in conj. with δ in Sagitt.
21	21	0	0	An occultation of the ☾ and ♀
22	22	0	0	☾ in conj. with β in Capri.
24	9	0	0	☿ in conj. with λ in Aquarius.
24	13	58	26	♃'s 3d Satt. will immerge
24	16	42	10	♃'s 3d Satt. will emerge
25	0	0	0	Clock before the ☉ 13″ 27″
25	9	0	0	♂ in conj. with ε in Pisces.
25	10	14	0	Ecliptic conj. or ● New Moon.
27	15	0	0	☿ in conj. with φ in Aquarius.

The waxing ☽ moon—the waning moon ☾

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL FOR DECEMBER 1826, AND JANUARY 1827.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low.			Hig.	Low.	High.	Low	
DEC.						JAN.					
26	43	37	30,36	30,28		11	43	34	29,27	29,20	
27	41	37	30,40	30,36		12	38	33	29,60	28,92	
28	39	30	30,39	30,37		13	40	27	29,83	29,60	
29	43	29	30,27	30,18		14	52	38	29,60	29,37	
30	50	37	30,09	30,06		15	40	31	30,10	29,95	,025
31	49	39	30,08	30,03		16	50	31	29,96	29,87	
JAN.						17	40	36	30,08	30,06	
1	44	41	29,88	29,47		18	38	30	30,15	30,10	
2	43	29	29,47	29,40	,275	19	37	24,5	30,15	stat.	
3	25	18,5	29,40	stat.		20	33	21	30,10	29,90	
4	30	12,5	29,60	29,50		21	29	23	29,76	29,54	
5	30	25	30,13	29,90		22	29	21	29,54	29,35	
6	37	24	30,16	30,10		23	31	13	29,54	29,49	
7	45	35	29,99	29,98		24	34	25	29,50	29,46	
8	49	38	29,98	29,76		25	33	19	29,55	29,50	
9	48	39	29,70	29,69							
10	50	37	29,79	29,29							

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32 N. Long. 0° 3′ 51 W. of Greenwich.

⁎ *The Rain which fell from the 9th to the 15th of this month is not noticed the severity of the frost having burst the pluviameter.*—C. H. A.

LITERARY AND SCIENTIFIC NOTICES.

The King of the Netherlands has requested the literati of that country to enter into a competition for its general history. The author of the best work is to be appointed Royal Historiographer; the work is to be completed from national documents, and the other able candidates are to receive remuneration for their labours.

The Count de Noe, a peer of France, is said to have invented a mode of painting on glass equal to the ancients. Four pictures painted by him on glass have been placed in the windows of the chapel at the Luxembourg, and elsewhere, all of which have been spoken of in terms of great commendation by the Parisian critics. The Count de Noe has, in conjunction with the Count de Chabrol, the Prefect of the Seine, established an academy for painting on glass, under the direction of some of the most celebrated French painters.—If this is a fact, it is rather extraordinary that the beautiful old painting upon the ceiling of the drawing-room at the Luxembourg should be obscured by two very contemptible paintings on glass by a living English artist.

New London University. — Dr. Fellowes has made a very noble bequest to this Institution, consisting of as much ground in the Regent's Park as the Council may deem requisite for a complete Botanic Garden.

Preparing for publication, a work on the Elements of Geometry, plane and solid, with critical and illustrative notes, and an examination of the theory of Parallels, by M. Legendre, Professor Leslie, and others.

A new Botanical work is preparing by Drs. Hooker and Greville. The first fasciculus, in folio, illustrated with 20 plates, will be published as early as possible.

It is reported that Colonel Trench purposes publishing a collection of Papers, illustrated by explanatory plates, relating to his projected Quay, with hints for some further improvements in the Metropolis.

A volume of Transactions of the Perth Literary and Antiquarian Society, is about to be published, which will contain some curious matter, from original MSS., among which will be found, a Historical Chronicle for the Year 1560, and Scotland's Teares, by W. Lithgow, the traveller.

A new History of Greece is in a considerable state of forwardness, by Mr. Grote, jun. of the banking-house of Grote, Prescott and Co., in which the literature, science, and arts of that country, will be treated of in a more detailed and prominent manner than in Dr. Mitford's work, which is more of a political nature.

The first part of a work is announced, entitled the History and Description of the highly-interesting Parish of Clerkenwell, near London, which will be completed in two small-sized volumes, illustrated with 60 engravings.

A new publication is in preparation, a part of which is to appear about the middle of February, and continued at periodical intervals, to be entitled the Library of Useful Knowledge; or a Series of Elementary Treatises; upon the various branches of Philosophy, History, and Art, and is to consist of a series of Treatises, each Scientific Treatise containing an exposition of the fundamental principles of some branch of science—their proofs and illustrations—their application to practical uses, and to the explanation of facts and appearances. A work of this description, if properly conducted, promises to be of considerable utility.

LIST OF PLATES IN VOL. XII.

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J. Shackell, Printer, Kirby Street, Hatton Garden.